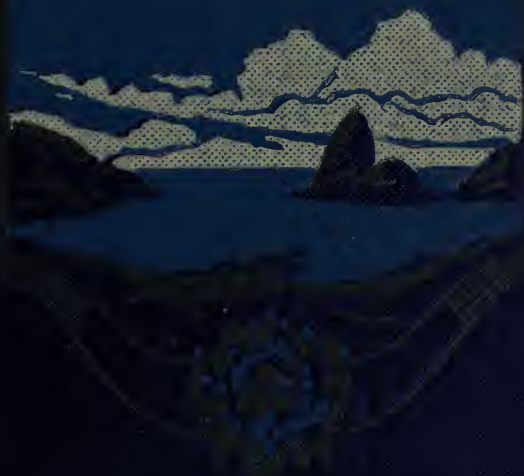


BRAZIL



L·E·ELLIOTT





BRAZIL
TODAY AND TOMORROW



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Botafogo Bay, Rio de Janeiro.

In the background are the Dois Irmãos Mountains, the flat-topped Gavea, and the curved granite peak of Corcovado.

BRAZIL

TODAY AND TOMORROW

BY
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ILLUSTRATED

"The time will come when the Ocean will no longer limit the known lands, when a new world shall be opened up to the followers of the sea, and Thule will be no longer the Ultima Thule of the earth."

Seneca, "Medea."

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TO
M. L. E.

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BRAZIL
TODAY AND TOMORROW

BRAZIL: TODAY AND TOMORROW

THE greatest of all American countries is comparatively the least developed. Brazil, with her 3,300,000 square miles of territory, four thousand miles of coast, and her incomparable system of great waterways, has the largest extent of wild and almost unknown country of any political division of the New World; she, and she alone, owns thousands of square miles of forests where no one has set foot but the native, still really living in the Stone Age, mountain ranges never properly prospected, with their deposits of minerals scarcely scratched, and millions of acres of grassy uplands waiting for the farmer and the stock-raiser.

Brazil is not scantily developed because little has been done; on the contrary, a wonderful amount of development has been accomplished, but the period of expansion has been short and the country so great and varied that whole regions remain out of the track of progress. Until a century ago, when Dom João opened Brazilian ports to international commerce, Brazil lay in a trance, bound hand and foot to Portugal, isolated from the world. Her erection into a separate monarchy found her without capital, without education, for she had neither adequate primary nor technical schools, without a press, and without any knowledge of her own resources except that gathered by the interior raids, wanderings and settlements of her own hardy people.

Everything that has been done to bring Brazil into the race of nations is the work of the last hundred years; the most intense period of rapid building since the establishment of the republic has lasted less than thirty years, for in that time has taken place the great acquisition of private fortunes in the industrial regions of Brazil. Much of the civic building, creation of public utilities, establishment of transportation lines, has been due to foreign capital and technical skill, but Brazil herself has contributed no small share of enterprise during the last fifty years; descendants of Portuguese *fidalgos* have taken up engineering, agriculture, commerce and city-making with energy and intelligence which is not always given a due share of recognition by those onlookers who think that all development of Latin America must come from without. In Brazil much progress, much creation, has come from within, and will come to an even larger degree in the future with improvement in technical education; but the country is enormous, the centres of population have always lain on or near the sea border, and interior Brazil, the virgin heart of South America, remains practically untouched.

The two great interior states of Matto Grosso and Goyaz cover an area of more than two million square kilometres; they make up one-fourth of the whole Brazilian territory, and Brazil covers half of South America: but this huge heart-shaped wedge in the centre of the continent has no more than half a million population. This is not because the country is tropical or worthless, but because it is unopened and unknown.

Within her wide area Brazil encloses a great variety of soils and climates: she has no snow line, because she has no great mountain heights; a peak less than three

thousand metres high, Itatiaya, in the Mantiqueiras, is the point of greatest altitude. But she has almost every other climatic gift that can be included within the fifth degree of North and thirty-third of South Latitude; between the eighth degree East and thirtieth West Longitude of the meridian of Rio de Janeiro. Brazil is a vast plateau with a steep descent to the sea along half her coast, and a flat hot sea margin of varying widths; this plateau, scored by great rivers, sweeps away in undulating prairies, sloping in two principal directions—inland, in the centre and south, to the great Paraná valley; and in the upper regions, northward to the immense Amazon basin. This is not a basin so much as a wide plate, for not only is the course of the huge *rio-mar* almost flat for the last thousand miles of its journey to the sea (Manáos is only 85 feet above sea-level) but this practically level ground extends northward all the way to the confines of Venezuela and the three Guianas, and southward until the Cordilheiras of Matto Grosso are encountered. Great expanses of this plate are filled with the sweltering forests of tropical tradition, forests containing a thousand kinds of strange orchids, immense and curious trees, insects, reptiles and animals; from Orellana and Lopez de Aguirre to Humboldt, Bates, Wallace and Agassiz, from the Lord de la Ravardière to Nicolas Hortsman the practical Dutchman who announced that El Dorado did not exist, to Charles Marie de la Condamine, Martius, Spix, Admiral Smith, Lister Maw, Schomburgk and Wickham, every traveller upon the Amazon has tried to describe the indescribable Amazonian forest. Deep, monotonous, silent, dark and changeless, the forest unconquerable walls in the uncountable rivers

traversing it from the snows of Peru and the interior plateau of Brazil, closing in upon the little cities where man has settled himself in a puny attempt to steal treasures out of its mighty heart.

There is a remarkable contrast between this humid forestal area of the north and the cool high cattle-lands of the centre, the pine and matte woods and wheat lands of the south and the hot coastal belt of the great promontory with its deep fringe of coconuts, its sugar country, tobacco fields and cacao plantations; between the coffee country of São Paulo and the regions of the carnauba palm and the babassû. No physical contrast could be more acute than that of the flat tropic swamps of Pará and the austere, fantastic and beautiful granite peaks of the Serra do Mar near Rio—the slender Finger of God in the Orgão Mountains, the curved up-rearing of the Corcovado, the cloud-wreathed head of Tijuca.

Nor is there less contrast in the different industries resulting from the different products of the widely diversified regions, and the population inhabiting them. The extreme north exists largely upon the rubber business, where independent individuals extract gum from wild trees in regions that are sometimes scarcely charted; in the south an imported Italian population performs routine tasks on the highly organized coffee plantations.

In between these two sharply marked divisions there are many industries and many grades of labour, from the *caboclo* half-Indian of the north to the negro of the centre and the Japanese, Syrian and Pole of the southern colonies, as well as the descendant of the Portuguese. There is in some parts of Brazil such a mixture of races and tongues that it seems as if the Jesuits were



Entrance of Rio de Janeiro Harbour (Bahia de Guanabara).

Showing the farther shore, the forts, the Pão d'Assucar, and the loop of Botafogo Bay.

needed again to invent a new *lingua geral*. Contrasts in personality, as well as in soil and climate in Brazil, and the difference in accessibility between an open seaboard and a deep and roadless interior, have all aided to bring about the marked diversity of interests which have more than once proved the salvation of the country. Publicists in Brazil sometimes sound a note of warning against the decentralization that has grown more emphatic since the erection of the Republican system gave autonomous powers to the States; there have been suggestions of separation of north from south on account of their distinct interests; but it is impossible to doubt that a country with a score of industries and of products to offer to world markets is in a better economic position than lands depending upon two or three main sources of income.

In the Argentine the city of Buenos Aires is the centre and fount of business; every great house has its headquarters there, its railway links and commercial arms reach out into all productive parts of the country. To Buenos Aires everything comes to be marketed whether from the interior or from abroad: it is *the* city, the head and heart of the Argentine. It is not possible to point to any one city in Brazil and to say the same. Not even lovely and splendid Rio, federal capital and gay vortex as she is, can claim to represent the commercial interest of the country; she is the spending-place of much of Brazil's income, but she is not the greatest earner. This honour falls to São Paulo, with Santos as the biggest exporter of values; no one denies the commercial palm to the Paulistas, but it is not heresy to say that the elimination of the coffee industry would not destroy the life of Brazil as, for

example, the disappearance of the cereal or cattle industry would threaten the Argentine. She would still retain her *herva matte*, her cattle, her mines; her rubber, wax, fruit, cotton, sugar, and tobacco; her hardwoods and forestal drugs and dyes, her cacao and fibres and nuts.

A whole world of interests divides São Paulo from Bahia, Bahia from Pará, Pará from Pernambuco, Maranhão from Victoria, Maceió from Porto Alegre, Rio de Janeiro from Manáos, Ilhéos from Paranaguá, Mossoró from São Francisco, Fortaleza from Florianopolis; some of these ports are great economically, alive with shipping, while others are little developing points which have not yet achieved international fame; but each has its distinct *raison d'être* and has a divergent social and economic impulse from that of many of her sisters. It is true that certain states seem to produce almost everything tropical or sub-tropical as well as being endowed with minerals, as Minas Geraes, growing coffee, cotton, raising cattle, mining precious stones, gold and iron ore, weaving her cotton and running a great dairy business with interstate shipments of her famous cheese and butter; or Pernambuco and the other states of the great promontory, with a host of different products; or São Paulo, where an energetic Brazilian *fazendeiro*, to show what his state can grow besides coffee, cotton, rice and sugar, has gardens containing "every known fruit" of temperate and tropical zones. But the distinct local industries of the widely varying Brazilian soil and climate are the most striking and promising elements of her economic life.

Many parts of South America have suffered from over-praise as much as from unmerited blame. None

have suffered more than Brazil, shut off from the non-Latin world rather more than is Spanish America because of her Portuguese idiom. There is little enough thorough study of Spanish on the part of Anglo-Saxons, but it is mighty compared to the study of Portuguese, a beautiful language and probably rather more readily acquired than the formal and clear-cut idiom of Castile. Non-comprehension of Portuguese and Spanish has been a bar to understanding of the soul of Latin America; nearly every person who wishes to learn something about any part of the Southern Continent runs to the libraries for a book of travels, generally written by a foreigner, himself sparsely acquainted with the language of the country about which he is writing, and frequently entirely from an outside viewpoint. There is a remarkable absence of study of South America from the South American's viewpoint, and it is for this reason that I have tried in this book to quote from Brazilian books and newspapers rather than from the ideas of foreigners, however distinguished. It is a loss to the Anglo-Saxon that so much fine and acute comment and description of South America by South Americans falls on deaf ears because of the language difficulty; perhaps the next few years may see the new interest in things South American stimulated by translations from many more of the writings of South American authors.

Only by understanding the South American better can the Anglo-Saxon see the relation that mutually exists, and realize the depth of the gulf between them at the same time. Especially since the outbreak of the European War we have seen an astounding number of agreeable but visionary articles written on the subject of the strong logical tie, geographical, political and

mental, between North and South America. The truth is however that the two continents have little geographical connection—Panama was once a strait—and perhaps even less racial, religious, and mental leanings. Both sections of the Americas have drawn their blood, language, religion and political ideals from Europe, but from two strongly marked sections—one, the Protestant Anglo-Saxon, commercial, mechanically inventive: the other, the Roman Catholic Latin section, artistic and mentally brilliant but not usually a born *commerciant*.

It is just as well to realize this difference clearly, to know that, at least in the past, the Americas have been more closely bound to Europe than to each other; the ties are especially strong in Brazil, more tender than in many parts of the New World, because separation in a political sense was obtained without violence. It is only through understanding of the mental and social attitude and conditions of the Brazilian that the newcomer can avoid pitfalls.

Mistakenly advised, and often lured by too golden promises, the stranger has often rushed to one or another part of South America, has found bitter disappointment, and gone home with denunciation of all things South American upon his tongue; but in many instances the fault lay within himself, in his want of knowledge of circumstances, physical and mental, and of his improper equipment for the task that lay to his hand. There are many such tasks, but they must be approached with equipment and spirit equally prepared; no fortune is to be attained by a mere rub of the magic lamp.

This book is offered chiefly with the hope of helping to stimulate interest in Brazil, to induce a more thorough study than these pages can offer in the only place where Brazil can be studied—in her own fair confines. If it supplements what has already been written, brings up to date for the time being the story of Brazil's development, if it awakens in more of the energetic and able people of the world a wish to take part in the opening-up of the great Brazilian resources, this book will have served its modest purpose. It is the fruit of seven years' travel in and study of Latin America, and two years' special work on and in Brazil, where seventeen out of the twenty States were visited.

A debt is owing to many Brazilian publications, sources of much statistical matter as well as illumination of Brazilian thought, as the *Jornal do Commercio* of Rio, *Brasil Ferro Carril*, very many local journals of different States, *Wileman's Brazilian Review*, the *Diario Official* issued by various authorities; the invaluable *Mensagens*, with their financial and industrial surveys, issued by State Presidents; to many kind and helpful friends in Brazil, England and America; to the *South American Journal*; and especially to Mr. W. Roberts of the *London Times*, to whom I am indebted for most of the subject matter in "The World's Horticultural and Medicinal Debt to Brazil."

CHAPTER I

THE HISTORY OF BRAZIL

BRAZIL and the Brazilians cannot be understood without knowledge of their history, for here as in no other part of Latin America the past has led up to the present without any violent upheaval. While the Spanish colonies of Central and South America were plunged first in revolutionary and afterwards in civil war, shedding not only blood but also tradition and brotherhood with their kin, Portuguese America was saved from similar conditions by the odd turn of fortune that made her a monarchy, independent of Europe and yet ruled by a European prince, during the most critical years of the nineteenth century.

Thanks to Napoleon Buonaparte, no furious chasm, difficult for even thoughts to bridge, was opened between Brazil and the Mother Country; it was never necessary for young Brazilians to be taught that Europe was an oppressor who must be bitterly fought. Brazil gained in the arts of peace and in the retention of pleasant relations between herself and the *lusitanos*, while, in contrast, Spanish American feeling is still so strongly anti-Spanish that in times of unrest it is the immigrant of Iberian blood who is singled out for special ill-will. These republics are without memorials to their Spanish discoverers or rulers; Mexico, for example, has no statue or tablet to the memory of Hernan Cortés, great figure as he was. Admiration for the *conquistadores* is generally forgotten in bitterness against

Spanish rule, all history before revolutionary times is coloured with this deliberately fostered feeling, and only occasionally does there arise a speaker or writer broad-minded enough to take up the cudgels for Spain and the rich inheritance she left to her children.

Brazil was more fortunate. From the time of the first Portuguese settlement down to the present day she has never suffered any great internal conflagration: there were persistent Indian troubles in the first centuries until the survivors of these unlucky natives moved back to the interior forests, but among the population that grew up in Brazil, hardy and prolific, there has been little strife with the insignificant exception of the feuds of the Emboabas, the Mascates and the Balaíos.

Brazil was discovered twice. First came a Spaniard, Vicente Pinzon, an old companion of Columbus: he found and reconnoitred the mouth of the Amazon, and sailed south to a point which he named Santa Maria de la Consolación, but which is now known as Cape St. Augustine. On his return to Spain his report roused no interest at a Court where new discoveries of land only added to the *embarras de richesses*, and the attention of the adventurous was already taken up with the West Indies; the second discovery (if we ignore the tale of the sight of Brazilian shores by Diogo de Lepe, whose wanderings were, in any case, unfruitful) was a pure accident, but, occurring to a Portuguese, was immediately seized upon as a basis of claim to part of the new lands in the West. This was on May 3, 1500, three months after the voyage of Pinzon to the Amazon. Spain, to whom the all-powerful Pope Alexander VI had allotted in the famous bull of 1495 all the new

lands discovered or to be discovered in the West, while Portugal was given rights to discoveries in the East, might have contested this claim but for two reasons: the first was that the Treaty of Tordesillas had shifted the Pope's dividing line westward to a point 370 leagues west of the Cape Verde Islands so that Portugal could retain her Atlantic island discoveries; the second was that either by accident or design the early cartographers drew Brazil's easterly outline about twenty-two degrees more to the east than it should have been, so that the whole of the enormous tract of what is Brazil today fell within the legitimate claims of Portugal. It was but a matter of equity that Portugal should have a share in the lands of the West, for to the work of that Portuguese prince, Henry the Navigator, the initiative for sea adventure was due. Henry, inheritor of sea traditions on both sides of his parentage, for his mother was an English princess, daughter of John of Gaunt, spent his life in a long sea dream translated into deeds; for forty years he lived on the lonely promontory of Sagres, his observatory full of charts, the haunt of shipmasters and geographers, with his shipyards below the windows ever busy with the building of stout caravels: from 1420 until his death in 1460 the Navigator urged and bullied his captains to go southward down the coast of Africa, where no sailor had penetrated within Christian times, whatever they had done in the days of the bold Phoenicians.

Thus were the Azores, the Canaries and Madeira re-discovered and settled, the pilots venturing with terror into that "Green Sea of Darkness" where sea monsters threatened their passage, and at last daring to sail farther into the southern waters where not only the

water but the land boiled with the terrible heat, they said. Rounding Cape Bojador they found a coast populated with sturdy blacks, began the slave trade that demoralized half the world; in 1486 Bartholomeo Diaz rounded the "Cape of Storms" and proved that there was indeed as Henry, dead for a quarter of a century, had dreamed, a southern gateway to the Spice Isles of the East—the goal of adventurers ever since Marco Polo's tale was spread abroad.

By this discovery the whole imagination of seafaring Europe was awakened: small wonder that Columbus in the end got a hearing when he talked of a sea-path to the East by way of the West, or that, on his return with a story of rich lands, Spain should have been satisfied to believe the theory that the shores of Cathay had been found. Columbus, who became half demented towards the close of his life, never knew that he had found anything but lands on the edge of Cathay; he once forced his men to take an oath to this effect under the penalty of hanging them to the yards of his ship.

To his obsession was chiefly due the lack of any clear conception in Europe of the existence of a great new continent until the Portuguese captain stumbled upon Brazil in 1500, although three years before Alonzo de Ojeda and Amerigo Vespucci had coasted the Caribbean, charting the north coast of Venezuela and Colombia as well as the east of Central America. That year of 1497 was the great year of discoveries, in sea adventure, for then began the series of voyages of the Cabot family, Labrador being discovered in that first scouring of the north seas by Europeans; from that year also dates that strange chapter of oriental history, Portu-

guese rule in India, when Vasco da Gama sailed past the Cape of Good Hope and reached Calicut.

Early in 1500 Captain Pedro Alvares Cabral was despatched with a fleet of thirteen ships to follow up the conquests of da Gama; warned of the calms off the African coast which later became notorious among sailors as the "doldrums," he stood far out to sea, was caught in strong currents, and found himself to his astonishment off an unknown coast.

Sailing south until a safe landing place was reached (Porto Seguro, some twelve miles north of the little town on the Bahian coast that today bears the name) he landed on Good Friday morning, was received in a friendly manner by the South American natives to whom Europe was thus discovered, took possession of the territory in the name of the Portuguese King, sent a ship back to Lisbon under André Gonçalves to report the discovery, and sailed on again to India.

Dom Manoel was sufficiently interested by the tale of Gonçalves to make farther investigation, equipped three vessels and sent them under the command of the Sevillian pilot Amerigo Vespucci to examine the new Terra da Vera Cruz. On the way they met Cabral's fleet returning from India, and this explorer put his helm about and with them re-found eastern South America, sailing along and charting most of the coast of Brazil. It is the precision and not the inaccuracies of these sixteenth century maps that form their most remarkable feature.

On this journey much hostility was shown by coast-dwelling natives, and a couple of landing parties met with disaster; the cannibal taste of the "Indians" was plainly demonstrated. No settlement was made. A

year later, in 1503, Duarte Coelho came with another fleet, seeking the waterway to India that was one of the dreams of adventurous Europe: another, allied to the first, was the quest of Prester John. Anyone who could find a quick sea-path to India and at the same time find and form an alliance with the mysterious Christian Priest-King, would wield power beyond rivalry.

Duarte Coelho was unlucky. His flagship and three other vessels were cast away on Fernando Noronha island, the other two reaching the shelter of what is today Bahia. Here the natives were kindly disposed, a little colony of twenty-four men elected to stay behind near Caravellas, and after a stay of five months the rest of the explorers went back to Portugal. They took with them logs cut from the coastal forests which proved to yield a dye equal to that known in Europe as "brasil," a much prized deep red colour: they also carried back Brazilian monkeys and some of the parrots and macaws still common in the north. Many of the old maps of Brazil are marked "Terra dos Papagaios" (Land of Parrots) instead of the official "Terra da Vera (or Santa) Cruz," but it was not long before the new country became generally known as the Land of Brazil-wood, and finally as Brazil.

From 1503 onwards no attempt at settlement or conquest of the land was made for thirty years; captains on their way to India called at the coast for fresh water, and on the return sailed into some northern wooded bay and cut brazil-wood. The real attention of Portugal was taken up with the splendid spoil that fell so readily to her hands in India; she loaded her caravels with the silks and spices and precious stones

of the East, just as Spain a little later loaded her stout ships with the treasures of the Aztecs and the Incas. Territory offering nothing more and nothing less than fertile soil and genial climate was little considered in the midst of those visions of gold: since then the whole world has been plunged in blood for the sake of such wide spaces of land. Land in great areas only became highly valorized, both in the Americas and Africa, when the virile races of Europe needed space for their teeming, dominating children.

Brazil benefited from her lack of wealthy cities offering loot. As a consequence of that lack she was not flooded, as were Mexico and Peru, with gold-seeking, brutal adventurers, but was instead slowly colonized by genuine settlers. Some of them did not come willingly, for Portugal used certain tracts spasmodically as penal settlements, but in the Middle Ages severe punishment was frequently dealt out for offences that would today be considered light, and many of the convicts thrust across the Atlantic turned out to be good citizens: good or bad, they were the stuff of which bold pioneers are made, and to their extraordinary hardihood and that of their tireless descendants of mixed blood the conquest of interior Brazil was due.

Portugal delayed occupation of Brazil until other European countries began to establish themselves along different parts of the neglected shore. In 1515 the mouth of the Rio de la Plata had been discovered by Juan de Solis, and Spanish settlements were set up south of the Portuguese claims—still indefinite. In 1540 the Spanish captain Orellana made his wonderful journey from Peru over the Andes and down the Amazon, and roused

the interest of Europe, but long before then the Dutch were trying to establish outposts on northerly Amazonian tributaries, and the French had settled a little colony at Pernambuco.

Of these the Portuguese made short shrift, a fleet being sent from Lisbon specially for their expulsion, but the settlement made by royal orders on the same spot met with no better fate, for in 1527 French raiders sacked the infant colony, to be followed a few months later by an English raiding party under Hawkins. The Portuguese Government, forced to take measures, determined on a plan which had already given good results on the island of Madeira. Instead of assuming the burden of colonization on the account of the government, large grants of land were made to Portuguese of high standing or wealth; on them fell the burden of settlement, but on the other hand to them would accrue the chief rewards of tropical adventure and industry. The Crown attained several objects at one stroke—the colonizing of a difficult country, the rewarding of many noblemen whose claims were apt to be troublesome, while at the same time an outlet was provided for the adventurous and turbulent. The waning of her power in India left Portugal with a surging class of stout-hearted folk upon her hands: she sent them to Brazil, and suffered as Brazil benefited.

The allotment of Brazil into separate *capitanias* (captaincies) was made in 1530; the average coastal strip presented to the holders was fifty leagues, and as to the depth of the land commanded was a matter for the individual captain: he could have as much as he could conquer. No one had any idea of what the hinterlands contained, for, with the exception of the riverine ex-

plorations of the Spanish on the Orinoco and the Plata, Europeans had not visited the South American interior east of the Andes.

Martim Affonso de Souza came out in 1531 as Admiral of the Coast, empowered to mark out the capitanias and to keep one for himself; he found French vessels hovering about Pernambuco, seized them, and went on to Bahia (Bahia de Todos os Santos) named thirty years before and frequently visited, where he found a Portuguese sailor, survivor of a shipwreck, married to the daughter of an Indian ruler and living like a patriarch with a large family already grown up about him. This Caramarú, "big fish caught among rocks," was of great help to the Portuguese when the colony was founded, and his half-breed family, possessing Indian knowledge and Portuguese leanings, formed the nucleus of the true hardy Brazilian of the north coast. Sailing south on his delimitation errand, Affonso de Souza entered Rio harbour, but passed on to mark out his own capitania on the hot sands of the São Paulo coast, near the present Santos, under the name of São Vicente. By a freak of fate, here the story of old Caramarú was duplicated. On the uplands beyond the Serra do Mar another Portuguese sailor was living, one João Ramalho married to the daughter of the native chief Tibiriça, and also surrounded by an extraordinary number of descendants: these children and grandchildren of Ramalho were the first *mamelucos*, that bold tribe who were thorns in the flesh of the Jesuits, but who were instrumental in giving Matto Grosso, Goyaz and Minas Geraes to Brazil.

Martim Affonso de Souza marked out twelve capitanias, but of the accepted applicants few besides him-

self made serious and systematic efforts to settle and hold their great lands; the rights offered them were very large, including almost every authority of the king himself except that of coining money: possession was perpetual and hereditary.¹ "If these hereditary captaincies had continued to exist," says the Brazilian historian, Luis de Queiros, "we should have today so many republics, corresponding to the number of territorial divisions, and not a homogenous whole which a nation so full of life and hope as Brazil constitutes. By good luck, however, almost all of the recipients of the grants were unsuccessful in their attempts at colonization, and some of them did not make any real beginning. . . ."

In the far north nothing was done by the *donatario* to colonize Ceará, and it was not until the French had for years established themselves on that coast and inside the mouth of the Amazon that, in 1616, a Portuguese military expedition from Maranhão turned out these rivals and founded Pará. Genuine colonization work was done at three outstanding points—Pernambuco, Bahia, and São Vicente, or rather, São Paulo, which became active nuclei of agricultural production, of a sturdy population born on the soil, dowered with a clannish fighting spirit that, local as it was, did much that was of extreme value in the evolution of Brazil. The strength of two of these centres, S. Paulo and Bahia, was largely

¹ Martim Affonso's capitania, then the most southern part of Portuguese territory, had one hundred leagues of coastline, with headquarters at S. Vicente; next came Santo Amaro (Itamaracá) and Parahyba do Sul (present Rio de Janeiro State); Espirito Santo; Porto Seguro; Ilhéos, stretching up to the south of the Bahia; Bahia itself, running from the Bay to the mouth of the S. Francisco river; Pernambuco; Maranhão, divided into 3 captaincies of which two, totalling 150 leagues, went to João de Barros, the third, of 75 leagues, to Fernão Alvares de Andrade; most northerly came Ceará.

derived from the two old Portuguese castaways, the battered heroes Ramalho and Correia; that of the third markedly successful colony, Pernambuco, was due to the powerful personality and real ability of the Captain, Duarte Coelho; he was aided by the fertility of the soil of the north-eastern promontory, Pernambuco showing itself so prolific a producer of sugar that it began to feed the mother country from very early colonial days, no less than forty-five ships a year calling to fetch sugar and brazil-wood. Settled with good immigrants by Duarte Coelho, who protested successfully against the dumping of convicts upon his capitania and ruled his people like a feudal lord, Pernambuco was the only territory that escaped control by the Captain-General sent out by the Crown in 1549 to try the effect of centralized power upon the languishing capitanias. Hardy and jealous of their independence, the Pernambucanos remained a little kingdom apart, ruled over by Duarte Coelho and his wife's relatives after him, until the Dutch appeared in strength off the north Brazilian coast and from 1630 onwards for over twenty years held possession of Pernambuco and a long strip of the coast above it. The Pernambucanos have always been a factor to be reckoned with in Brazilian affairs: the territory they hold is richly productive and has never looked back in commercial importance. They do not forget that great tracts of land were in early days won by their ancestors by hard fighting from the Indians, nor that they have sent many an able son to high places in the governing of Brazil. It was the productivity of the Pernambuco ("Nova Lusitania") and Bahia colonies that made colonial Brazil valuable and attracted hardy settlers to her shores.



Ponte Santa Isabel, Recife (Pernambuco).
Praça Mauá—one of Rio's wharves.
Water-front at Bahia, Lower City.

Bahia was the queen city of Brazil from 1549, when Thomé de Souza was sent out as Captain-General and made this the administrative and political head of the country, until 1762, when Rio de Janeiro became the Vice-regal Capital; she also was a fighting city, seized and sacked now and again but successful in getting rid of her foes in the end, and she was the centre of tobacco cultivation from early days. When gold and diamonds were discovered in the interior valleys and serras the Bahianos played a plucky part in exploration and opening, as well as charting, regions of forest and sertão hitherto unseen by white men. To the men of Bahia, as well as to the courageous legions of Pernambucanos led by the Albuquerque family, Brazil owes much: but the great pioneers, the unsurpassed confronters of hardship, the men who made Brazil the huge country that she is instead of the strip upon the Atlantic seaboard that she might have remained, were the *bandeirantes* of São Paulo.

When the gallant Martim Affonso de Souza, sailing first to Cananea, eventually built his modest mud and palm leaf town at S. Vicente, he was saved from the hostility of the Tamoyo Indians by the friendliness of Ramalho, father of many children by a daughter of Chief Tibiriça. The Tamoyos as a rule gave a great deal of trouble to the Portuguese, although the French in their numerous attempts at settlement along the Brazilian littoral always managed to make fast friends of this tribe. To anyone who knows the São Vicente of today, it is difficult to imagine on what the first settlers lived; the shore is hot, sandy, backed by mangrove swamps, producing beans, maize, mandioca and sugar.

Small wonder that an early chronicler said that to live in these colonies it was necessary to forget all European habits of life, to begin a new existence upon new food, with all old ideas of comfort and even necessity thrown aside.

When a company of Jesuit priests, headed by José de Anchieta, came to S. Vicente, they found their ministrations thrown away on a disorderly and undisciplined band of settlers. Conceiving their duty to be here, as the Padre de las Casas and many of his cloth conceived it in Mexico and Central America, the Christianizing of the natives, Anchieta decided to leave the coast (where Braz Cubas had now built his little chapel and hospital on the island where Santos stands today) and seek converts in the uplands. The mountain barrier was climbed, and on January 25, 1554, an altar was set up on the green and well-watered plains of the interior, and mass was said on a site named São Paulo de Piritininga, in honour of the saint whose day it was. The habit of early missionaries and discoverers of naming new places with the Roman calendar in their hands has helped the historian to fix many a doubtful date.

A few miles away from the mission was the town of João Ramalho, who had been tactfully confirmed in his possession of lands, the "Borda do Campo," by Portugal, while his settlement was formally named a township with the title of Santo André in 1533. Its site was near the present São Bernardo, an open sunny region of prairie with woods on the horizon.

With this tribe of Ramalho's making the Jesuits sought no connection; they could not convert those half-breeds any more than they could make the hardy

impenitents on the coast give up stealing Indians. Better and more pliable material was to hand in the pure Indian tribes; two groups, one under Tibiriça and the other under chief Cai-Uby, built their cabins in new S. Paulo, Tibiriça's people forming a line which is now the Rua São Bento, while the other converts guarded the road that led over the hills to S. Vicente.¹ It was not long before trouble came. João Ramalho's children plagued the priests: the priests retaliated by getting an order from the then Captain-General, Mem de Sá, by which Santo André was razed to the ground and its inhabitants forcibly incorporated in São Paulo. The latter soon changed its character as a peaceful mission settlement, the Indians suffered from aggressions by the whites who now came up from S. Vicente or their own half-white kin, and in the end a concerted attack was made by the natives upon the town, only old Tibiriça remaining loyal. The Indians were beaten, but the Jesuits saw that the mission could not be restored; they determined to carry the cross farther afield. With indomitable energy and indifference to suffering the band of priests made their way across the interior plains and woodlands, until they founded a new city (Ciudad Real) at the junction of the Paraná and Piquery, and began to gather the Indians together in new settlements.

For a time they were undisturbed. But the life of the new Portuguese colonies depended upon agriculture; the white men were neither many enough nor sufficiently acclimated to till the fields themselves, and they seized the unfortunate natives and forced them to field labour. It was unsatisfactory work, as a rule:

¹ Calculation of the Brazilian historian Theodoro Sampaio.

the native of the eastern coasts of South America was not a cultivator of the soil by habit, but rather a hunter and fisher, as he is still in his interior retreats. They were too on the whole a gentle as well as an idle race, and they died like flies under the whip.

It was not long before the coast plantations of the Portuguese were denuded of workers: to get more slaves it was necessary to follow the Indian across the sertões. It was about 1562 that the first slave-hunting expeditions, the "entradas," began; they were headed by the *mamelucos*, the descendants of Ramalho, who had no hesitation about betraying their native kinsfolk to the white man. Violence was avoided: the preferred plan was to coax any tribe approached "*com muito geito e enganos*" and only when blandishment failed was force resorted to. Tamed natives accompanied the "entries" and when the children of the woods heard tales of waiting pleasures told in their own tongue, whole clans often followed willingly to the coast, never to return. When they retreated more deeply and became more wary, and it was found that the Jesuits were advising them, a grimmer system was planned; it was decided to conduct open warfare against the missions.

By this time, in the first part of the seventeenth century, the Jesuits had attained remarkable success with their converts; they were not content with teaching them the Christian faith, but insisted upon the girls learning spinning and weaving while the men planted and reaped. Results were much the same as those desired by the coast settlers, but methods differed. About Ciudad Real, in the Guayará region, fourteen great missions flourished when the Paulistas began to disturb them: by the middle of the sixteen

hundreds they were all broken up, the fields waste, the priests fled, and the Indian converts prisoners in S. Paulo or hiding in the forests.

To accomplish this, more careful expeditions were arranged than the earlier "entradas," although the *mamelucos* had made some wonderful journeys, across the river Paraguay, over the Chaco and into Bolivia, now and again having a brush with the Spanish settlers of the South, who, later on, were expelled from tentative settlements in Rio Grande do Sul: no land was too wide for the Paulistas to hold. But the "bandeiras" were now organized like an army, men enlisted in them regularly and accepted rigorous discipline. Beginning with the deliberate object of uprooting Jesuit control of the Indians, explorations continued in this form for over eighty years with other aims added—conquest of the interior, discovery for its own sake, and search for mines of gold and precious stones, as well as the repression of Spanish entries from the south and from Peru.

At the time when these extraordinary expeditions began the interior of South America was still unknown. The high sertão and the forests were still full of mystery, although the coast had been stripped of such marvels as the giants who frightened Pinzon's sailors, the men fourteen feet high seen by Magalhães, and the alligators with two tails which Vespucci reported. In the interior magic still reigned, with its trees yielding soap and glass, Lake Doirada with shining cities about its margin, and the marvellous kingdom of Paititi, lure of many disastrous expeditions, where some of the natives were dwarfs, others fifteen feet tall, some had their feet turned backwards and others had legs like birds. The

bandeirante opened the sertão and dispelled these wonders.

In his book, *O Sertão antes da Conquista*, Sampaio says that the Paulista "was compelled by his habitat to be a bandeirante: the conquest of the interior was written in his destiny." If that is true, at least these labours were taken up with a kind of fierce joy. There was scarcely an able-bodied man of the time who did not join one or more of the bandeiras, and there is on record the case of Manoel de Campos who made twenty-four of these journeys. Many bandeirantes never returned, remaining in the sertão to found towns in Minas, Matto Grosso or Goyaz; some, returning after years of absence, found their wives married to other men, while "many heroes brought back from the sertão children whom they had not taken in," says Rocha Pombo.

The bandeira went always under the supreme command of a leader to whom implicit obedience was due; before setting out the bandeira in a body heard mass, the leader confessed and made his will, invariably including the phrase . . . "*setting out to war and being mortal and not knowing what God our Lord will do with me.*" . . . A priest accompanied each bandeira, not only to shrive the dying and bury the dead, but by way of easing the conscience of the band regarding their mission and "reconciling it with the Divine Mercy." The outfit for every man was made at his own cost, and if it is possible to judge by the baggage of Braz Gonçalves, who died on an expedition in 1636, and whose goods were scrupulously recorded and sold at auction, it was simple. His greatest possessions were three negro slaves, but he had also an awl, a bit and a hammer, a pair of worn slippers; some lead and gunpowder,

one tin plate, a chisel, a mould for casting shot, a ball of thread, an old cape.

It was only possible to face what lay beyond the outposts of settlement when equipped and ready for war; the bandeirantes knew that there was constant risk of attack by Indians and that nature opposed them with as fierce a menace. The country through which they passed was likely to be foodless, and they were prepared to sow seeds of grain in green valleys, camp, and wait until the crop was harvested before going on their way.

The rivers of the interior plateau, flowing westward with the tilt of the sertão, themselves offered a great highway of adventure to the early bandeirantes, bringing them into Paraguay and the outskirts of Bolivia and the Argentine, but as they went farther afield the Paran  was left to the east, Goyaz and Matto Grosso were traversed, and the path of the pioneers led up unknown mountains, through untracked woodland; they marched across boundless prairies as if navigating the ocean, with only a sea-compass and the starry night to guide them. Nothing checked these explorers; had not the discovery of the General Mines turned their minds to gold-hunting, they might have followed Antonio Raposo across the Andes and disputed Peru with the Spaniards. Wherever they penetrated they established outposts and forts counting a collision with the Spanish as the best reason for creating a stronghold: it was the work of these untiring sertanistas that led the way to the present magnitude of Brazil.

The bandeira was the original creation of the Paulista, without parallel in history; not even the white pioneer of North America had the same functions: he neither wandered so far nor performed such deeds. Jo o Ribeiro

remarks that "as in the case of the caravans of the desert, the first virtue of the bandeirante was a resignation almost fatalistic, and abstinence carried to an extreme; those who set out did not know if they would ever return, never expected to see their homes again—and this often happened." The bandeira in its greatest phase was a travelling city, a commune linked by mutual interests, that surged forward over the silent country; nothing deterred them, whether mountain passes, precipices, hunger, weariness, or constant fighting. If they had a path it was that of the crosses on the graves of the men who had gone before them. They went always on foot.

There is a long list of great sertanistas. It includes many names well known in Brazil today—Martins, Soares, de Souza, Barreto, Tourinho, Sá, Leme, Paes, Almeida, Dias, Ribeiro, Carvalho, Rodrigues, and a host of others; few men escaped the lure of the sertão, and some leave stories which are the Iliads of Brazil, putting these among the great adventures of all time. There is for instance Antonio Raposo, who headed a bandeira which left S. Paulo in 1628, and which was "the biggest and most devastating known." Three thousand people composed the expedition, and its main object was the destruction of the Jesuit missions on the Paraná river, near Ciudad Real. One by one the missions, which had grown into thriving industrial communities, were attacked, besieged, and smashed; as they fell, escaping brothers or converts carried the warning to other convents, stiff fights were made, and in some cases long resistance was maintained. But in the end the Jesuits were broken and dispersed, and the bandeirantes went back to S. Paulo with thousands of

Indian slaves. The courageous Jesuits went deeper into the interior, collected such remnants as they could of their property and their protégés, and began the work again.

Raposo, years afterwards, made another journey which brought him into fame as a legendary hero; he crossed the Paulista sertão by Tibagy, thence traversed the heart of Brazil from south-east to north-west, entered Peru, scaling the Andes, crossed to the Pacific and waded into those waters sword in hand; returning, he discovered the headwaters of the Amazon, sailed down it, and when at last after years of travel he came back to São Paulo no one recognized him.

A magnificent figure among indomitable bandeirantes is that of Fernão Dias de Paes Leme. Well may the wild sertão be haunted by the shade of such a man as this, or of his lieutenant, Borba Gato, or that father and son who were known among the Indians of Govaz as Old Devil the First and Old Devil the Second.

Fernão Dias, the "Hercules of the Sertão," was the discoverer of the emerald mines of Sumidouro, after ten years spent in search. He was a famous slave-chaser of the sixteen hundreds, an extremely religious man whose zeal was only assuaged by much building of chapels and convents with the money earned in long raids; practical, astute, suave, he won his ends by tact rather than violence, among his exploits being that of leading the whole of the allied Goyana tribes to São Paulo. Approaching their territory Dias made no threats, but camped nearby, cultivated fields of cereals and vegetables, and so ingratiated himself into the confidence of Tombu the chief that one day the old Indian collected his people and agreed to go to the

pleasant lands of which the Paulista spoke. Five thousand natives thus marched voluntarily into captivity; Tombu remained the worshipper of Fernão Dias until his death, but with the exception of runaways none of the Goyanas ever saw the sertão again.

This was in 1661. Three years later the Portuguese court, greatly desiring the discovery and development of mining regions which should yield tribute to Lisbon, offered special rewards to discoverers of mines, appointed an Administrator of Mines in Espírito Santo, where some coloured stones had been found, and Afonso VI wrote to Fernão Dias asking him to search the interior that he knew so well for the source of the "emeralds" whose beauty raised hopes of finding mines equal in value to those of the Spaniards in New Granada (Colombia), still today the cradle of the finest emeralds. As a matter of fact the green stones found in Brazil are the beautiful but semi-precious tourmalines.

Consenting, the famous bandeirante made some preliminary excursions and in 1676, when he was over eighty years old, led out a great *comitiva*; the first winter's camp was made in a valley beyond the Rio Grande, the second at Bomfim, the third at Sumidouro. At last in the Serro Frio some showings of gold were located, and on the way back Dias died by the Rio das Velhas, in the far interior across Minas Geraes. The bandeira had gone through great suffering, and scores of men were buried by the way: at one time the remnants of the expedition had appealed to Dias to give up the hunt and return, and on his refusal made a plan to kill him. The conspiracy was headed by a young man who was the son of Dias by an Indian girl, and

dearly loved by the old sertanista, but when convinced of his boy's guilt Dias hanged him, pardoning the other plotters but driving them from the camp.

To Fernão Dias was due the exploration of what is now the State of Minas Geraes, the whole of it falling practically under his sway as the founder of at least a dozen towns in that hilly interior, the majority surviving to this day. His search had a curious sequel: his son-in-law and faithful aide, Borba Gato, who had found gold mines in Sabará and registered them in 1700, was returning to S. Paulo after the death of his leader when he met with a party headed by the official Administrator General of Mines. Borba Gato's charts and proofs were demanded, refused, a quarrel broke out, and the servants of the pioneer set upon the Administrator and killed him. Not daring to face S. Paulo with this tale, Borba Gato fled to the interior where a tribe of Indians friendly to him dwelt by the Rio Doce, and there lived hidden out of the reach of the law for twenty years. At the end of that time, attempts to find the Sabará mines having failed, he was offered a pardon in exchange for the secret; he accepted the offer, returned to civilization, and presently retiring to a farm with his family died peacefully in his bed at the age of ninety.

A direct result of the murder of the Administrator was the stocking of the sertão of Minas with cattle: the entourage of the dead man, as much horrified by the deed as was Borba Gato, instead of returning to the capital took to the bush with the seeds, stores and livestock without which no expedition set out, and formed nuclei of fazendas in a score of different places.

One of the earliest discoveries of gold in Brazil was made by Bartholomeu Bueno da Silva in the Serra Dourada, in Goyaz, about 1682. He it was who found the Indians wearing scraps of gold as ornament, and tricked them into showing the place of its origin; displaying a bowl of *agua-ardente* (*aguardente*—spirit made from sugarcane) he set light to it, telling the Indians that it was water and that he would in like manner set fire to all their springs and rivers if they did not reveal the source of their gold. Southey calls Bartholomeu Bueno “the most renowned adventurer of his age,” and to him is due the opening-up of Goyaz, until then only entered by passing slave-hunters: but his discoveries were not followed up and it remained for his son, nicknamed by the Indians *Anhanguera* the Second his father having been known to them as *Old Devil the First* on account of the incident referred to above, to re-find the mines and extend the gold-mining fever to Goyaz. It was in 1722 that this son, then a man of over fifty years, succeeded in obtaining government help for exploration: by this time Minas was overrun with gold seekers from every part of Brazil and the authorities were ready to give active help to new mining expeditions. This *bandeira* set out with great *éclat*, crossed the Rio Grande and wandered for three years, the leader seeking landmarks dimly remembered from his boyhood. Persistent, patient, conciliating his weary followers, he founded the town of Barra, at last located the gold mines, returned to São Paulo and got together a new band of men, led the way back and settled them at what is now the City of Goyaz, and so closed with a remarkable colonizing feat the last of the great expeditions into the high *sertão*.



The Falls of Iguassú.

On the boundary of Argentina with Brazil; this series of lovely cascades is said to have altogether four times as much force as Niagara.

A little later gold-miners penetrating to Matto Grosso began operating at Cuyabá,¹ and almost immediately the discovery of diamonds at Diamantina brought a new rush of people into this far interior region. The day of the explorer, the true bandeirante, was over, and the age of mining was by this time in its epoch of greatest excitement.

Few writers on Brazil have refrained from scourging the bandeirantes for their cruelty to the wretched natives and for their destruction of the Jesuit missions. It is true that they were brutal, but theirs was a brutal age, and in explanation, not extenuation, of their deeds it should be remembered that they, the white civilian colonists, were fighting for their own preservation against hostile Indians whose hand, quite naturally, was against the invader, and secondly against their economic ruin by the line of action taken by the Society of Jesus. Not only did the patient Jesuits coax and catechise the Indian, but they put him to work in the fields and sold abroad the product of his hands: when later on conflict raged in North Brazil between colonists and Jesuits the chief grievance was that the Society, for whose support the civilian community was taxed heavily, used the Indian labour denied by Royal decree to the settlers, and also maintained great stores (*armazens*) where every kind of European merchandise was kept.

It was for this reason, and not because they were bad Christians, that the colonists of Maranhão once stood on the shore with guns in their hands and refused to

¹ Brazilian historians differ as to dates, but Southey says that the first discovery of gold in Matto Grosso was made in 1734 by Antonio Fernandez de Abreu.

allow a shipload of Jesuits to land until they had given a solemn promise to do nothing with the Indians except to convert them; they regarded the members of this religious body as business rivals. Nor were the Jesuits tactful in their dealings with colonists or colonial government authorities; secure in the support given them not only by the Pope but, especially perhaps in the period of Spanish rule in Brazil under Philip II, by the King, they made no concessions, defied the civilians, and apparently courted trials of strength: right or wrong, they were able to count upon judgment in their favour in any quarrel referred to Europe.

When the bandeirantes began their unmerciful raids upon the Jesuit communities in the south Brazilian sertão the number of missions had increased from thirteen in 1610 to twenty-one in 1628, and to them had been largely drawn the natives who once, as Thomé de Souza said in writing to Portugal, had been so thick that "even if they were killed for market there would be no end of them." Attacked, the *padres* might well have counted upon help from the Governor General of Brazil, but for the fact that about this time the whole military attention of the authorities was taken up with the determined aggressions of the Dutch upon the northern capitanias; the affairs of São Paulo were left in the hands of the Paulistas. The great matter of regret is that in the case of the Jesuits much excellent constructive work was wasted, just as the fine colonizing work of the French in Rio and in Pará and Maranhão was destroyed, and that of the Dutch on the Amazon and in Pernambuco; the spirit and the interests of the times forbade the Portuguese to allow settlers of other races a foothold in Brazil, but nevertheless it was unfortunate

that so much good blood and good work was thrown away in a huge land that so badly needed both.

While the Paulistas were exploring and adding great tracts to the colony in the south, a law unto themselves, undisturbed by invasion except an occasional attempt by the Spaniards from the Plate and attacks on S. Vicente by English and French corsairs, the history of the north was one of constant aggression and desperate defence. Until the year 1578 no concerted attempts were made by England, France and Holland against the colonies of Portugal, a country towards which feeling was not unfriendly but in that year King Sebastião of Portugal, with the flower of his nobility was killed in North Africa in the terrible battle of Alcazar el Kebir, and Philip II of Spain, the "Demon of the Middle Ages," seized Portugal and all that was Portuguese two years later. The South American colonies automatically came under his sway, and at once fell heir to the feud between Spain and her European neighbours. Brazil was fair game, and during the sixty years that elapsed before Portugal was able to re-assert her independence the easily approached northern capitanias were threatened, sacked and occupied by one or another of the three chief enemies of Spain. Sackings of coast towns made no great difference to the development of Brazil; when the ransom was paid the raiders sailed away and the business of life was resumed without any vital change; no towns were ever ruined by such predatory visits. Occupation of districts was another matter, and, with the exception of loss of lives every one of which was precious in young colonies, the effect was good rather than harmful; the period of Dutch rule on

the northern coast of Brazil was a lasting beneficial stimulus. Nor was Spanish control of any direct hurt to the Portuguese colonies: their internal management was little interfered with, Portuguese officials continued to be appointed to Brazilian posts, and if Spain did not adequately defend them because her hands were already desperately full she at least did Brazil the kindness to leave it alone. The one serious administrative measure she took was the formation in Lisbon of a Junta to care for Brazilian commerce, similar to the Council of the Indies sitting in Madrid, and this was undoubtedly useful: the narrow monopolistic trading policy pursued was simply in line with the ideas and practice of the times. It was protection carried to an extreme, was useful at the time of its initiation, and, if it outlived its usefulness in its most irksome manifestations, the principle has so far survived that today, in the third lustre of the twentieth century, it may be said that only one great commercial nation has ever definitely thrown it aside.

The group of capitanias extending from Espirito Santo northwards to Ceará were when Brazil came under Spanish rule the most productive of all; it was but eighty years from the date of Cabral's discovery, and only fifty from the time of colonization, but flourishing populations were settled along the seaboard, growing sugar, tobacco and cotton and cutting stacks of dyewoods to fill the fifty ships a year that called at the main ports. Bahia, seat of the Captain-General's administration, was also a bishopric, and the chief religious orders had settled in each considerable town and founded churches, schools and convents. In 1570 a Royal Decree forbade the compulsory use of Indians as

labourers, and to fill the ranks of field workers Africans were brought in: to this idea the Portuguese were inured, for the West Coast of Africa had been a source of labour supply for them since 1440; it was the discovery that negroes could be transplanted to the Americas and would there work with docility, thrive and multiply, that made possible the cultivation of thousands of square miles of land, both in North and South America, and warmly as we may reject the principle of slave-labour now, it was the only one which could have opened American lands to the extent which they attained in the seventeenth and eighteenth centuries. The white man could not have performed this physical labour.

Indian labour was abolished at the instance of the priests; it was remarkable that to the enslavement of Africans under circumstances equally brutal no objection was made. Negroes were brought to Brazil from 1574 onwards until the abolition of the slave trade, though not of slavery, in 1854. The debt of Brazil to the African negro is a very heavy one.

Soon after the junction of the Spanish and Portuguese crowns there began the series of purely plundering attacks delivered by European enemies of Spain which lasted until the establishment of the Dutch at Pernambuco, but which were of so little political importance that in the meantime the Portuguese authorities were able to destroy entirely the French settlements at Maranhão and Pará which lasted from 1594 to 1615. The work of replacing French with Brazilian settlements was carried out by Jeronymo Albuquerque, son of a dominating Pernambuco family, and not only were well-started French colonies ruined but the exploration

of the Amazon, commenced by the famous Daniel de la Touche (Seigneur de la Ravardière) was abruptly ended.

In 1621 the Dutch Company of the West Indies was founded, companion organization to the rich East Indies Company; with the approval of the Dutch Government the Company was equipped for settlement and conquest, and could call upon the home authorities for the help of ships and armed men if war occurred in the course of operations. A fleet of thirty-six vessels under Admiral Jacob Willekens sailed for Brazil early in 1624, made directly for Bahia, and took the city without much trouble. Holding it was a different matter, the population taking to arms, and a year later a combined Spanish and Portuguese fleet arrived and forced the Dutch to capitulate. Another impermanent attack was made in 1627, and in 1630 a different point of aggression was chosen by a great fleet of seventy vessels: the Pernambucan city of Olinda was besieged and taken, the Dutch secured themselves in power and remained masters of this and three other capitánias afterwards seized; they were governed by the West India Company for nearly twenty-five years.

Evidences of the occupation of Olinda and its sister settlement, Recife, now the capital and a very flourishing city, are to be seen in the many houses surviving with curved gables, high unbroken fronts, the exterior walls shining with blue and white glazed tiles; the Dutch brought with them their love of order and cleanliness, good methods in plantation management and excellent organizing power, and the only genuine objection to the rule of the Hollander in Brazil was that the country did not belong to him. All Brazilian historians bear witness to the merit of Dutch methods.



A Remnant of Colonial days; street in Olinda, old capital of Pernambuco.

Old and New Brazil.



Modern residences near the Gloria Gardens, facing the bay, Rio de Janeiro.



The West India Company was able to induce an admirable Governor to take charge of the new possession, Prince John Maurice of Nassau; he reached Recife in 1637, and inaugurated a conciliatory policy towards such Pernambucanos as would accept Dutch rule: those who would not were pursued into the interior forests where they retreated under one of the Albuquerquees, and were forced to flee from Alagoas into Bahia. When such resisters were caught they were shipped to Dutch settlements in the East Indies.

Religious freedom was promulgated by the Protestant rulers, more systematic administration of settlements and estates inaugurated, better sugar milling methods introduced as well as farming implements, and the scientific exploration of the interior was made. Prince Maurice brought with him map-makers, geologists, botanists and expert mineralogists, and sent them to the valleys and hills of the Bahian hinterlands. Elias Herkmann took an expedition of one hundred men from Recife in 1641, to make scientific investigations, and although he did not find mines of importance he studied native relics and language, subsequently publishing a book on the Tapuyo race.

George Marcgraf and Wilhelm Piso are also Dutch names of note in connection with Brazil; the former studied Brazilian topography and water systems and wrote a treatise on the subject as well as the *Historia Rerum Naturalium Brazilium*; the latter was the first classifier of Brazilian flora and fauna. "We owe to him," says Dr. Egas Moniz of Bahia, "the discovery of the emetic-cathartic properties of ipecacuanha and copaiba" as well as the therapeutic virtues of jaborandi and red mangue and several other drugs ob-

tained from the Brazilian *matto*. The first scientific charting of the sertão behind Pernambuco, Alagoas and north Bahia was done during this time; herds of cattle already wandered over interior pastures, and settlers led by the independent spirit which renders the Brazilian indifferent to solitude had formed fazendas along river borders; explorers had wandered by these water paths looking for mines, but systematic maps and charts were lacking.

In 1640 Portugal revolted from Spain, regained her independence, and offered the crown to a member of the House of Braganza, a line which retained its inheritance until a few years ago. The effect upon the Americas was again notable; the Pernambucanos, still carrying on guerilla warfare from the forests, were heartened, obtained help from an enthusiastic Bahia, and redoubled their efforts; the Dutch came to an agreement with Portugal that all possessions conquered by them during the Spanish régime should be held, and tried to extend their holdings farther north—an effort which was vain in itself, costly in life and money, and hardened the determination of the colonists to do for themselves what the mother country would not do on their behalf. In 1643 Prince Maurice returned to Holland: he had the interests of the colony as such at heart too much to please the West India Company. A liberal minded man, he wished to see the colonial ports opened to free commerce, succeeded in getting the Company to forego all monopolies except that of taking dyewoods away from Brazil and sending in slaves and munitions of war, any Dutch captain being free to visit ports controlled by his compatriots; these were not agreeable pills for a monopolistic organization to swallow. On

the other hand in recalling Maurice of Nassau the Company lost prestige, henceforward carried on a losing struggle with the virile Brazilians, and were forced out of section after section until by 1648 only the forts of Parahyba, Rio Grande do Norte, the island of Itamaracá and the city of Recife were in Dutch hands. A certain embarrassment was created in Europe by this situation, and the Portuguese Government, taken to task by Holland, sent emissaries to the insurgent Pernambucanos to order suspension of hostilities: the leaders replied that they "would go to receive punishment for their disobedience after they had turned the invaders out of Pernambuco," and went on with the war. Holland herself, now at loggerheads with England or rather with Cromwell on account of her support given to the Stuarts, could not help her Brazilian colony; a severe defeat was inflicted by the Pernambucans in 1649, at the battle of Guararapes, and the Dutch, never recovering from this blow, were finally obliged to capitulate to Francisco Barretto in January, 1654. The Pernambucan attackers were nerved to this final effort, the storming of Recife, by the news of the disaster inflicted on van Tromp's fleet in the English Channel at the hands of Blake.

Three months later the Dutch commander with all his troops left Brazil, and the only fragments remaining to the States General after a tremendous outlay of money and blood were a few islands in the West Indies and a piece of the Guiana country: small return for great effort. Portugal paid eight million florins to the Dutch in settlement of Brazilian differences and agreed to allow Holland free trade with the American colonies in all articles except the precious brazil-wood.

The chief results of Dutch occupation of the four capitanias of the north-eastern promontory for twenty-four years were, first, stimulation of world interest in this part of the vast Americas, for the sea-captains who carried Brazilian products for the first time into other parts of Europe than Portugal acted as advance agents of Brazilian commerce: second, scientific investigation into natural products and demonstration of the value of drugs peculiar to this part of South America: third, introduction of better town management systems: fourth, creation of a healthy national spirit in the northern provinces, with lasting effect upon character: and the quickening of colonization in the extreme north. It was not until the Dutch and French settled in Ceará and Maranhão and on the Amazon that serious efforts were made to develop these tropical territories under the equator; the year 1620 witnessed the first arrival of settlers of Portuguese nationality in Maranhão when two hundred families came from the Azores.

Another interesting and direct result of the Dutch intervention was the creation of the *Companhia do Comercio do Brasil* (Commercial Company of Brazil) by the Governor General, intended as a set-off to the Dutch West India Company. It was established in 1650, received monopolies and concessions of a valuable character, and in return was obliged to provide a powerful armed fleet to convoy merchant vessels through enemy-infested seas. The Commercial Company did as a fact render great services to the Brazilians fighting against the Dutch, blockading northern ports while insurgent armies attacked by land.

While the north was struggling with the Dutch and French and incidentally becoming solidified by the

tussle until a genuine national feeling came into existence, Bahia, beating off attacks and remaining the administrative residence of a Captain-General, was the centre of the wealthiest part of the colony; all the slaves brought from Africa were sold here, and although they were partly distributed, this was the chief slave-owning region and is still the place where more pure negroes are to be seen than anywhere else in Brazil. Farther south Espirito Santo, one of the oldest of Brazilian colonies, was growing cane and raising cattle, but suffered from raiding foreigners, as also did Ilhéos; Rio de Janeiro became the seat of a second Captaincy-General in 1608, for a time, with command over S. Vicente and Espirito Santo but had no importance until the discovery of mines made her the chief gateway to the golden regions. Out of the path of the Dutch, whose object was wide agricultural lands, Rio neither suffered nor gained as did the North; at this part of the Brazilian coast the mountain barrier comes right down to the sea's edge, the granite wall shouldering into the waters of the deeply indented bay: there is very little land suitable for plantations except in narrow valleys until the Serra do Mar is climbed. It was this lack of sugar land that kept Rio uncolonized, lovely as she is, for half a century after the colonies on either side of her were started; settlement by the Portuguese might have been put off still longer if the French under Admiral Villegaignon had not taken possession of the bay in 1555, made friends with the Tamoyo Indians as the Portuguese were never able to do, fortified a rocky island, and established a Huguenot colony here—the ill-fated "*France Antarctique*." The energetic Mem de Sá, Captain-General after Thomé de Souza, brought a

fleet from Bahia, drove the French into hiding on the mainland, sent his nephew, Estacio de Sá, to Portugal to get help, and this gallant young man returned with a strong force in 1565. In two years' time, with troops from Bahia and São Paulo assisting, the unfortunate Huguenots were utterly defeated, the remnants of the exiles retiring into the woods with their Indian allies and disappearing from history. The body of Estacio de Sá, killed in the last decisive fighting, was buried in the shade of the Pão d'Assucar near the first Portuguese town founded in the bay and named São Sebastião. Another member of the same family, Correia de Sá, was sent to head the new Portuguese settlement, and eventually died there at the age of 113.

Division of Brazil into two captaincies-general in 1608, to be united again soon afterwards and again subsequently divided, was part of the experiments made by the European home governments, apparently with the sincere wish to develop the country; it was supposed that a region so vast could not be governed by one man, but as a matter of fact the occupied territory was along the seaboard on the whole, and communication by sea was fairly speedy; from 1549 onwards, when the first Captain-General was appointed, the mother country bought up when convenient the strips of land belonging to the heirs of the *donatarios*; some new captaincies were also added from time to time, as that of Grão Pará in 1616, Minas Geraes, Matto Grosso and Goyaz after the discovery of gold and diamonds, and an independent State of Maranhão, governed separately from the rest of Brazil was also created in 1621, thus adding to the governmental confusion in spite of good intentions. Decentralization was increased by the

lack of commercial exchange between the different regions, and no successful effort improved this fault until the notable Marquis de Pombal took matters in hand in a statesmanlike manner in the latter half of the eighteenth century, buying the capitanias which were yet in private hands, creating Brazil a viceroyalty and Rio the viceregal capital.

But before that date much water had flowed under Brazilian bridges. It is not the purpose of this book to give in detail the history of Brazil, but to show the chief events and their effect upon development. Following the creation of the capitania system and its series of coastal settlements came the penetration of the southern interior by the Jesuits in their "reductions," and the scattering of these centres of Indian population at the hands of the bandeirantes; the next happening of extreme importance for Brazil was the seizure of different parts of the coast by the Dutch and French, with their stimulating effect upon Portuguese colonization; it was after this that the gold rush to the interior of Minas, Goyaz and Matto Grosso populated and opened up the sertão in tiny patches, but at the same time half denuded the coast of its settlers and injured the agricultural production of the country, the prosperity of which was almost entirely owing to the introduction of negro slaves, another great factor in Brazilian progress.

Today the mining industry of Brazil accounts for a very small item on her exports lists, chiefly because the diamonds which go out are mostly contraband, the gold is produced by only two principal mines, and while there is a promising export of manganese it is insignificant compared to the big business of the country or to

the possibilities contained in Brazil's mineral seamed mountains. In the early eighteenth century Brazil was a famous gold country, and it is reckoned that over five hundred million dollars' worth of this metal has been taken out. Nearly all this gold was found in placers easily washed out by hand in the crudest manner; when the rich alluvial deposits along river valleys were exhausted Brazil ceased to be a gold producer on a spectacular scale. In Minas Geraes rich sands were found near the present Ouro Preto, the first mining city that was founded bearing the name of Villa Rica; all about it the whole country is still in heaps, turned over by the miners who came a couple of hundred years ago. In that day people flocked into Minas, coming by road from S. Paulo, by the S. Francisco river from Bahia, and by a shorter cut over the mountain passes from Rio. The bones of many folk remained by the way: it is said that of one band of 300 Paulistas setting out in 1725 only five persons, two white men and three negroes, reached their objective, the far interior mines of Cuyabá. It became necessary for the authorities to forbid the taking of negroes to the mines, so general was the abandonment of plantations, but the protest of the Crown was only half-hearted; it was eminently satisfactory that a stream of gold and diamonds should flow across the Atlantic to Lisbon, and it was of as little use for governors to point out the bad economy of coastal depopulation in the seventeen hundreds as it had been for Governor Diogo de Menezes to write to the King in 1608: "*Your Majesty may believe me that the true mines of Brazil are sugar and brazil-wood, whence your Majesty draws so much advantage without costing the Royal Treasury a single penny.*"



Two Views of São Paulo City.

São Paulo, premier city of the leader State of the Brazilian Union, stands on the breezy uplands of the southern plateau; it is a busy, prosperous centre with the first modern civic equipment. Population 550,000.

Quarrels at the mines led to the "Guerra dos Emboabas," a factional disturbance between the Paulista discoverers and stranger gold-diggers; in the end the Paulistas were driven back, retired to their own uplands, and Minas Geraes was politically separated. Indomitably energetic, the men of S. Paulo turned their attention southward, where the Spaniards had entered and settled, drove the intruders out of Rio Grande do Sul and thus secured another, and one of the finest, regions for Brazil.

In 1750 King John V of Portugal died. The death of Portuguese monarchs did not as a rule make more than a perfunctory difference to the Colonies, but in this case the succession of José I was important because, with infinite faith in his brilliant Minister Sebastião José de Carvalho e Mello, afterwards Marquis de Pombal, he left the chief affairs of the kingdom to these able hands. Pombal has been bitterly attacked: he was without doubt a man of iron; but he was a man of unusual foresight and intelligence who thoroughly realized the great value of Brazil, and did much to improve economic conditions in that huge possession. He seems to have had what Brazilians call a *palpite* concerning the destiny of Brazil and Portugal.

Almost the first act of this statesman was the curtailment of the powers of the Inquisition: he abolished *autos da fé*, which must have given relief to Brazil if the historian Porto Seguro is correct in saying that no less than 500 Brazilians had been burnt alive in Lisbon by the Holy Office. With a special eye to Portuguese America he reduced taxes on tobacco and sugar, had the diamond traffic strictly supervised, created com-

mercial companies to trade with Pará, Maranhão, Pernambuco and Parahyba; specially encouraged the plantation of rice and cotton in the North; legislated most of the commerce which was in the hands of the enterprising English into Portuguese channels; inaugurated good ship-building yards in Brazilian ports; settled boundary disputes with the Spanish on Brazilian borders; brought all capitanias still in private control under the Portuguese Crown—Cametá, Caeté, Ilha de Joannes, Itamaracá, Reconcavo de Bahia, Ilhéos, Porto Seguro, São Vicente and Campos dos Goytacazes; and as his most powerful and bitterly assailed effort he laid hands on the Jesuits. The Society, overwhelmed in the South, was strongly entrenched in the North since the opening of Pará and Maranhão; they had done wonderful and self-sacrificing work there; but they hostilized the colonists and made the mistake of arming their protégés the Indians against the settlers. They constituted themselves in Brazil as Bartolomé de las Casas did in Mexico and Guatemala, the Defenders of the Indians; they were extraordinarily successful with them, and it is not impossible that if some working arrangement could have been found between the colonists and Jesuits a great problem might have been solved—that of obtaining some control over the natives and teaching them industries without undermining their peculiar physical constitution. With the best intentions in the world, more modern efforts made to hold the Indian tribes in civic life have ended in their speedy dwindling and extinction; no one except Colonel Rondon seems able to teach the Indian and keep him alive.

To break up the Jesuit missions, Pombal in 1755 de-

creed the "emancipation of the Indians of Pará and Maranhão," a curious corollary to the laws that the Society had themselves obtained earlier forbidding the Portuguese settlers to enslave Indians. A little later occurred in Portugal an attempt against the life of the King: the Jesuits were, quite unjustly, accused of being concerned in it, and on this pretext they were ordered expelled in a body from Portugal and from all Portuguese possessions. This was in 1759, expulsion from Brazil taking place during 1760; not content with this, the abolition of the Society of Jesus was obtained from Pope Clement XIV in 1773. This severe measure was rescinded in 1814, and the Jesuits came back to Brazil as to other world dominions, doing excellent educational work at the present time; their colleges are magnificent institutions, and it is commonly said in Brazil that the very best education for men is obtained in the Jesuit college at Itú, in the interior of São Paulo State.

José I died in 1777, and Pombal promptly descended from power; but his work in the stimulation of Brazilian industries, the creation of a genuine Brazilian entity through strong centralization, and the erection of Rio into a viceroyalty, paved the way for the next great change.

Early in the nineteenth century, when the North American colonies of Great Britain had successfully revolted, and the French Revolution was an accomplished fact, ideas of republican independence began to agitate many heads in South America. Brazil had only one uprising, the famous Conspiracy of Minas, which got no farther than plans; it was headed by one of the influential Freire de Andrade family, and all the

plotters were eventually pardoned except one scapegoat, who was executed publicly in Rio in 1792, and thus achieved immortality: his nickname of *Tiradentes* is preserved in the name of a square in Rio and a public holiday on the anniversary of his death.

A few years later Napoleon was overrunning Europe. Portugal, friendly to his enemy England, incurred the Napoleonic wrath, tried to make terms too late, and was being actually invaded by the French when an English naval squadron appeared in the Tagus commanded by Sir Sidney Smith; the Portuguese royal family and a host of courtiers went aboard Portuguese vessels and were convoyed across the Atlantic, out of Napoleon's reach, to Brazil. It would not at all have suited England for the Braganzas to fall into hands which already held too many royal prisoners. It was one of the most remarkable transferences of a crown in history, this emigration of Dom João to his American colonies; it was a useful and a dignified refuge for him and at the same time was of great value to Brazil, probably saving her from years of disorder and bloodshed.

The royal party arrived first at Bahia, where the town turned out in enthusiastic welcome and invited Dom João to make this city his seat of government; but his destination was Rio, and he sailed on, first giving out a proclamation which ensured him a good reception in the Capital—the *Abertura dos Portos*, or opening of the ports of Brazil freely to the ships of all the world "friendly to Portugal." Public printing presses were now permitted, a newspaper was started, chiefly engaged in training the minds of the *nascidos no Brasil* (Brazilian-born) to appreciation of the monarchical presence, but still the commencement of Brazilian



Two Views of the Avenida Rio Branco, Rio de Janeiro.

The beautiful Avenida, over a mile long, was driven through the city from the docks to the Avenida Beira Mar as part of the extensive city improvements costing over £20,000,000 begun in March, 1904; the avenue was completed in November, 1905. Rio has 1,250,000 population.

journalism; foreign capital began to come, and active Europeans, attracted by the advertisement that the transference of the monarchy gave Brazil, entered and established businesses; the Banco do Brasil was inaugurated; fine buildings were erected in Rio; the Regent's collection of pictures and books, brought with him, formed the nucleus of the excellent museum and library of modern Rio; the harbour was improved, a School of Art and Naval College founded. By the time that Portugal was free from the Napoleonic shadow, and, in 1821, called Dom João home again, he left behind a Brazil to which a tremendous impetus had been given, and which had been raised to the dignity of a kingdom equal in importance with Portugal and Algarves six years earlier. North and south of Brazil the newly freed Spanish-American countries were deep in troubles born of a sudden injection into independence of unaccustomed populations. Brazil herself could scarcely have avoided being drawn into the vortex had her citizens still to complain of the narrow policies and repressive measures of the colonial system; they had become too proud and too strong for development to be longer retarded, and the European turn of fortune came in the nick of time. It was lucky that Dom João was a man of shrewd good sense. Dom Pedro, son of Dom João, remained in Brazil as Regent, and the country was still linked to Portugal; it was soon apparent that this condition could not endure. The jealous legislature in Lisbon wished to reduce Brazil again to the level of a colony under tutelage, despite the efforts of Dom João; the news came to Rio together with a peremptory order for the return of the prince, and he, a good diplomat, elected to throw his lot in

with Brazil, and declared the Independence on the historic hillside of Ypiranga, in 1822.¹

Proclaimed Emperor soon afterwards, Pedro ruled for nine years and then abdicated in favour of his five-year-old child, Dom Pedro *segundo*. To this rather stormy period of control is due the commencement of deliberate colonization of Europeans into Brazil; it was a policy widely continued later on by Pedro II, and afterwards adopted both by the Federal Government and by separate States of the Union. A regency lasted until Pedro was fourteen years old, the most remarkable hand on the reins of power meanwhile being that of the astute priest, Father Diogo Feijó.

Pedro II endeared himself to Brazil by his kindly and tactful spirit, his genial broadmindedness; he was a scholar by instinct, and did his best to advance Brazil by the encouragement of railroad building, invitation to foreign capital, and the throwing open of wide spaces of southern land to good class immigrants. It was during his reign that the English, who had established themselves firmly during the first monarchical periods, sending ships regularly and opening markets for Brazilian products, were followed by the commercial French and later by the German merchant. The industrial and educational advance of Brazil is largely owing to the personal initiative of Dom Pedro II. His reign was one of the longest in history, from 1831 to 1889, and the development within this period includes inauguration of city tramways as well as railroads; the discovery that coffee would grow in Brazil and its systematic cultiva-

¹ Portugal swallowed her loss without much protest, there was no serious excitement in Brazil, and the Portuguese troops stationed in Brazil were shipped home without violence from more than one district.

tion; discovery of the properties of rubber; the introduction of factories; use of hydraulic power.

Following the world agitation against slavery, Brazil in 1854 forbade the introduction of negroes; there were however still large numbers of these people in bondage as well as a much larger number free.

Public feeling was much excited about the question in the eighties, and at last in 1888, when Dom Pedro during a period of illness had made his daughter, the Princess Isabel, Regent, the powerful influence of many highminded Brazilians was brought to bear, and the decree of abolition was signed.

Slave holders were not so pleased as statesmen, when their farm workers immediately forsook the field and flocked into the cities; agriculture undoubtedly suffered, and to the discontent of the planters is credited the agitation that now gathered head against the continuation of the monarchical system. The truth seems rather to be that the Empire had outlived its usefulness, and surrounded by republics could not survive. There was also a general fear lest Isabel, said to be priest-dominated, should be permanently appointed Regent, and this idea hastened the day that would otherwise have been postponed, in all probability, until the death of the good and highly revered Dom Pedro. A growing band of republicans, some of the foremost men in Brazilian affairs today, found themselves strong enough to proclaim the end of the Empire; Dom Pedro was informed and asked to leave the country within twenty-four hours, and did so; the Republic in Brazil dates from November 15, 1889.

The first years of the new régime were darkened by disorders, the worst being the revolt, long-drawn-out,

in Rio Grande do Sul. Two military presidents were succeeded by four civilians, and these in turn by a third militarist, and notably extravagant, presidency from 1910 to 1914. The present President, a lawyer, Dr. Wenceslão Braz Pereira Gomez, is making heroic efforts to redeem the financial condition of the country, and is fortunate in being aided by a group of exceedingly able men. The country became deeply involved during the last twenty-five years; if she were an old land the burden would be severe: her strength lies in her youth, internal vigour, and unsurpassed abundance of untapped resources.

The tremendous money spending of Republican times has been sharply censured since the outbreak of war in Europe suddenly pulled up the country to a realization of her debts; it is probably fortunate that she was just too late to arrange yet another, for which negotiations were opened in 1914. But while it is true that literally tons of money were borrowed and spent after 1889, it is also from that date that the great leap forward of the country is reckoned; her extravagance was a wide advertisement—the attention of the world was called to this spoilt child of the nations as no modest jogging along the beaten track would have done. Bankers, commercial firms, writers, settlers came to Brazil; there was a feverish expansion in railroad building, and from this period dates the inauguration of good modern port works in Rio, Bahia, Pará, Pernambuco, Santos, Victoria, and many other points of call for ocean-going vessels; water-works and town drainage, the better paving of a score of cities, extinction of yellow fever and other tropical pests, were all accomplished with money borrowed in the hey-day of Brazil.

The check in facile borrowing of very large sums on easy terms has undoubtedly acted as a cold shower upon South America in general, somewhat accustomed to financial sunshine; the result has been salutary in awakening the people all over the continent to the need for unprecedented personal effort. It has, too, brought about a new sense of North American relations, created and needed, with South America. The European War has turned the United States from the position of a debtor to that of a creditor country, and while up to the end of 1922 her loans to the whole of South America have not exceeded two hundred million dollars, chiefly short-time State borrowings, caution is mutually beneficial. There is, however, much work to be done which calls urgently for gold supplies, and it is but logical that the country accumulating money rapidly should be willing to take up a due share of the development work waiting; European interests need not and should not be ousted, but can be readily and happily supplemented.

The United States of Brazil today contain over 24,000,000 people, still largely concentrated upon the sea coast, in a score of thriving cities. She is at peace with her neighbours, with no shadow upon her political horizon; her only great problem is the industrial, financial one, and this, with the concentrated effort of Brazilians and the right kind of external help, can be solved. The entry of Brazil into the War upon the side of the Allies, after the torpedoing of the Brazilian vessels and the declaration of war by the United States against Germany, brought about a new international comradeship, and has awakened the world to a better understanding of the spirit and power of the country.

CHAPTER II

COLONIZATION IN BRAZIL

THE story of colonization in Brazil is unique in the annals of the human movement across the world that has been going on ever since man began to multiply and to seek elbow-room; it is one of the phenomena of exodus.

Arrival upon the shores of Brazil of an extraordinary variety of races was not a voluntary immigration in most instances. It was the result of a studied policy, inaugurated by the Emperors of Brazil, and carried on to the present day by the Federal Government and certain of the separate States; experiments in various kinds of people were made on a concerted plan, the colonies were grouped, in many cases isolated, retained their language and customs, still produce the food to which they were accustomed in the home land, and only become assimilated as their populations leave them or touch in time the fringe of others. The official mothering which they received tended rather to keep them grouped than to spread them in the earlier years.

The first official, deliberate importation of colonists of blood foreign to Brazil or Portugal began in 1817, when Dom João brought in Swiss settlers. Agents of the Brazilian Government recruited no less than five thousand in Bern, although owing to delays and accidents only about two thousand sailed from Amsterdam and Rotterdam: landing on a hot coastal belt after a trying voyage, fever took the mountaineers, and but a sparse

seventeen hundred reached the foot of the Serra do Mar. Climbing to the pretty nook where the town of their founding, Nova Friburgo, stands today in a shelter of green mountains, sickness still followed them, and only the hardiest or most resistant clung to the colony, survived and left their name to another generation. Many dispersed to other localities. Nova Friburgo, now reached by the Leopoldina railway, and a thriving city, fresh, flowery, producer of cereals and peaches, owns few Swiss inhabitants today. A second batch of immigrants, three hundred and forty-two Germans, filled some gaps in the ranks: their readiness for labour may have been heightened by memories of the difficulties of transit to Europe, for the journey had taken one hundred and eighty days in a sailing ship. Germany at this period had not begun the industrial expansion which later kept all her people at home; economic conditions were severe on the ambitious worker, laws and social customs were irksome, and enterprising men looked across the seas for free lands. Germany became for about twenty-five years the very best recruiting ground for Brazil.

The second official colony was founded in Rio Grande do Sul, and consisted entirely of Germans—one hundred and twenty-six persons originally—who came in 1825. The colony was named São Leopoldo, used the water highway of the Rio dos Sinos until a railway line was built connecting it with Porto Alegre and with new colonies to the north, and has developed into one of the chief towns of the state, with forty thousand inhabitants. Its establishment was followed rapidly by that of Tres Forquilhas and S. Pedro de Alcantara, both in Rio Grande and both German, 1826; by another S.

Pedro de Alcantara, also German, in Santa Catharina, 1826; Rio Negro, in Paraná, 1828, formed by disbanded German soldiers. Petropolis, the model city in the hills above Rio, owed its inception to Dom Pedro and was founded with Germans and Swiss, but not until 1848, for more than ten years of civil war down south in Rio Grande, when the "República de Piritinim" was proclaimed, checked colonizing projects in the Empire. With the suppression of trouble German colonizing was resumed in the south, Santa Catharina creating the Santa Isabel colony in 1845, while Rio Grande started five new centres between 1849 and 1850. The latter year is also memorable for the foundation of Blumenau, in Santa Catharina, by the good Herr Blumenau of Brunswick. At the same point on the lovely river Itajahy a little nucleus had existed precariously since 1827, added to by a group of one hundred and twenty-two Belgians in 1844; Herr Blumenau brought in Germans gradually at his own expense, supervising the colony in the rôle of a kind of paternal burgomaster, and in 1864 was able to count two thousand five hundred people; his efforts had, however, cost him about twelve thousand dollars. The Brazilian Government repaid him his outlay and made him official Director. Today Blumenau, once a small self-contained *nucleo*, is a bustling city with fifty thousand people, a lively exporting business and a railroad line. In 1850 the Dona Thereza colony in Paraná was started, while the famous Joinville, first called Dona Francesca, began in 1851 in Santa Catharina; it owed its existence to the fact that an Orleans scion, the Prince de Joinville, married a Brazilian princess who inherited large estates chiefly consisting of *matto* in Santa Catharina. The

family ceded twelve square leagues of this land to the "Colonizing Union" of Hamburg, whence settlers were promptly sent, both the Prince and the Brazilian Government making a protégé of the *nucleo*. The large sums of money spent resulted in a fine town, now numbering some twenty-five thousand people, served by the Brazil Railways. A little later (1852) the Minas Geraes colony of Mucury was founded, but by this time German colonizing in arranged shipments had come to an end; any additional German colonists came singly. The German Government, both alarmed at the losses in blood—for emigration to North America and other parts of South America was also proceeding, although along different lines—and by reports sent home as the result of investigation which gave a poor account of the condition of the isolated *nucleos*, passed a law to forbid emigration to Brazil. Dom Pedro had to turn his attention to other countries.

Before the coming of the Germans, South Brazil was almost totally neglected; demand for tropical produce such as sugar and tobacco had kept the attention of Portuguese and their mixed-blood descendants for over three centuries to North Brazil, where negro slaves multiplied on the warm coast; the grassy uplands of the south attracted few Brazilians, and these chiefly bandeirantes whose main business was to keep out Spaniards from the Plate, and whose wild cattle strayed and bred on the natural pastures. So wild and untenanted was the country that up to the middle of the nineteenth century the German colonists had trouble with Indian raiders. But it was the right climate for the north-born Europeans, a wise choice that proved a success while other settlements dwindled out. During

the same period there were several attempts to colonize Espirito Santo, notably at Santa Isabel, and Cachoeiras and Transylvania, six or seven starting between 1847 and 1856. The energy of the settlers was discounted by the hot climate, and many moved south, where the great increase in settlers' populations is a fair criterion of their success. The official figures of German entries into Brazil from 1820 to the end of 1915 are one hundred and twenty-two thousand eight hundred and thirty, but the people of German blood in Brazil are now reckoned at about 250,000. The southerly towns under their influence are clean, well-kept, live centres, with constantly expanding industries. Rio Grande today is quite one of the best sections of Brazil: the influx of Italians brings them more than equal in numbers to the German element, taking the state as a whole.

With organized German settlement checked, Brazil during the eighteen fifties turned her attention to the mother country, and brought in Portuguese; they were settled in the warmer latitudes. In 1853, such a colony was begun in Maranhão, at Santa Isabel, followed by five more in the same northern and sultry state in 1855; in the same year three Portuguese colonies were established in Pará, at Nossa Senhora d'O, at Peçanha and at Silva, while Rio de Janeiro was planted with another five. A little later Bahia was given Portuguese colonies at Sinimbû, Engenho Novo and Rio Pardo. These and others were not strikingly successful until or unless joined by other colonists, for the Portuguese, who are artisans rather than agriculturists, melted from the lonely settlements and found jobs in the coast cities.

By this time coffee culture was coming into favour, the slave business was doomed, although the actual abolition of slavery did not occur until 1888, and planters invited immigrants to their developing estates. The work of obtaining immigrants was undertaken by individuals, as the Vergueiro family by Theophilo Ottoni and the Visconde de Baependy, with varying success, as well as by the International Society of Immigration of Rio, with headquarters in Antwerp. Colonists sent to coffee estates worked on the *métayer* or *parceria* system, inherently vicious. The colonist had the satisfaction of considering himself an independent worker, but as he started with a large debt, never owned land and earned no wages, his lot was a poor one if crops failed or the *fazendeiro* chanced to be unfair. He arrived owing for the passage of himself and family, and was given a house and a quantity of food—of the country; he cultivated a certain number of coffee trees, or allotment of sugarcane, took the harvest to the owner's mill and received half the result after milling. It is said by J. L. Moré, in his book *Le Brésil en 1852*, that the hard-working Bavarians and Holsteiners who worked on this system in São Paulo often paid off their debts in four years and then had money in hand; but other investigators spoke adversely on the subject, finding colonists of ten and twelve years' standing still indebted and living hopelessly. In the end the *parceria* gave way before a general wages system. The *métayer* plan still exists in some parts of Minas, Espírito Santo, São Paulo and other coffee regions, and can be found in the sugar districts and in the cacao region of Bahia, but large ownership of great scientifically-run estates has driven it from general employment. Investigations made by

J. von Tschudi, sent by the Swiss Government in 1857, and by the German Consul Haupt ten years later, proved the failure of the share system; colonists could be seized and imprisoned if they tried to leave the estate on which they worked, and, unable to support life on the produce of their allotments, would have been even worse off had it not been for the "many acts of benevolence for which the emigrants had to thank the kindness natural to so many Brazilians," says the author of *Brazilian Colonization*, a little brochure published under a pseudonym in London in the year 1873.

The same writer, giving a list of nationalities comprising the immigration into Brazilian states up to that time, nearly thirty-five years ago, before the great entry of the Italians had begun, or that of the Poles and Russians with their gift of hardy persistence, names a French colony taken to the banks of the Ivahy river in Paraná about 1850, which expired for want of transportation and therefore of markets; this, with the influx of Algerian French in 1868-1869 to a spot near Curityba, also in Paraná, is the most important attempt of the Gallic race to found settlements in Brazil; the disturbances of the latter, the first vine-growers of the state, gave the authorities as much trouble as the subsequent adventures of the Russians ten years later in the same region.

"Jacaré Assu" also mentions a few Alsatians in Nova Petropolis (Rio Grande); the Dutch families in Joinville, Rio Novo, Petropolis, and Leopoldina (Espírito Santo); the Tyrolian wanderers; the Danes of Estrella; the Mongolians—five hundred and sixty-six of them, who came by contract in 1856; and the colony of Ice-

landers who went to Joinville, and were "said to be doing very well." He also speaks of the "colonies of Brazilians" in Brazil, who were settled in Estrella, at Sinimbu, Iguape and Itajahy; and the North American influx of 1867. This later item was the result neither of population overflow nor invitation, but was the result of the struggle between the North and South of the United States, the disappointed slave-owning southerners seeking a land where their losses could be forgotten. The exodus, of course, was in several directions: groups went into Mexico, some to Canada, to different parts of South America; I have seen an excellent colony of these migrants and their descendants at Toledo in the south of British Honduras, growing sugarcane and prospering. Those who came to Brazil were brought from the port of New York by the "United States and Brazil Mail Ships," since defunct, the first batch of two hundred leaving in December, 1866. They were followed by some thousands, but today it is difficult to trace them, the groups into which they were originally assembled having long since broken up.

Seeking these settlements, I visited Villa Americana in São Paulo state but found it long since turned into a villa Italiana, with only one family of American origin which seemed to have thriven; forty miles or so across country, at Piracicaba, however, I found an American school, admirably conducted by a little old lady who told me that she had come with the original settlers of Santa Barbara, founded in the parish of Piracicaba, but now a shadow. Her school was a delightful one, with the stocky girl pupils going through gymnastic exercises in unwonted rational clothes, but they were all Brazilians; the Americans had melted, the ones

who remained not being able to keep up in the struggle.

There seem to have been at least four definite attempts at settlement besides individual selection of dwelling places: these were at Santarem, on the Amazon's junction with the Tapajoz river; Cannavieiras, on the coast of southern Bahia; Juquiá, or Cananea, below Iguape in southern São Paulo; and the Santa Barbara-Villa Americana group in central São Paulo. Some of the immigrants had money, but in many cases the war had swallowed it; former owners of slaves, they were often less fitted to make a living from the soil than the negroes they had left behind. The one crop that they understood thoroughly was cotton, and it seems to have been tried at each of the four spots named, but in at least two regions success was nullified by climate. In São Paulo's interior lands a fair measure of reward was obtained and an impulse to cotton growing dates from this time. The Cananea colony, where some English were introduced about the same time, was a notable scene of discontent; both groups of colonists hurried back to Rio and made so many complaints that the consuls went through sieges. The fact was that the site for the settlement was unsuited to Anglo-Saxon modes of life and that insufficient preparation had been made: a few years ago a colony of Japanese was given land a few miles from the ill-fated spot, at Iguape, and, settling down to grow rice, have made a striking success. But the points of view of the two nationalities, as well as colonization methods pursued by the organizers in the different cases, had nothing in common. At Cannavieiras there is today a thriving series of cacao plantations and a Brazilian population: these people keep in

order, carefully weeded, a grave. There is a fence of hard Brazilian *massaranduba* about it, perennial flowers blossom above; under the soil lie the three little children of the leader of the American colony, and of it there is no other trace.

Of the Santa Barbara colony there is a story told which is comedy instead of tragedy. The colonists grew, besides cotton, watermelons: one year just as the crop ripened, cholera broke out in S. Paulo, the sale of melons was forbidden, and the growers faced ruin. At this time President Cleveland had come into office in the United States, and had just appointed a new consul at Santos: he must, then, be a good Democrat. The settlers, who on landing in Brazil had ceremonially torn up the Constitution of the United States and offered thanks to heaven for having permitted them to reach a land where the sacred Biblical institution of slavery was still in force, remembered that they were American citizens. They wrote to the consul a letter of congratulation on his arrival and at the same time detailed their grievances with regard to watermelon sales. The consul replied cordially, suggested that he should visit them, and received post haste a warm welcome. The afternoon of his arrival at the colony found the entire population drawn up on the platform, a southern Colonel at the head of the deputation. The train rolls up, a first-class compartment door opens, a gentleman steps out with a suitcase, and walks up to the Colonel with outstretched hand. It was the consul—but a consul as black as the ace of spades.

It is said that the Colonel, rising nobly to the occasion, gasped once, shook the hand of the consul, and that he and the other southerners gave the official the

time of his life; but when he departed they vowed that never, never again would they trust a Democratic administration. . . .

There are a few descendants of this group who have attained true distinction in Brazil and genuinely work for the land of their adoption.

It was after the dwindling of the flow of German incomers about 1860 that a steady stream of Italians was directed towards Brazil. Their wooing was in a great measure due to the systematized efforts of the coffee-growers of S. Paulo state, and, after the establishment of the republic in 1889, of the state authorities. Workers from North Italy were found to be those who best suited the needs of conditions of the coffee industry, and to this part of Europe were directed the attentions of recruiting agents. Laborious, serious, economical, bent upon acquiring a little fortune, the Italians came with their wives and families, accepted their position as *colonos* upon the great estates, never very ardently attached to one particular piece of soil, and ready to pick up and move on wherever advantageous conditions beckoned.

From the year 1820 to the end of 1919, a total of one million, three hundred and seventy-eight thousand, eight hundred and seventy-six Italians have officially entered Brazil as immigrants. With their children born in Brazil they total well over two millions today, greatly outnumbering any other entering race. Their colonization has been a marked success, due not only to their personal characteristics, but to the just treatment given them by the authorities. There was a time, soon after the abolition of slavery, when the *colonos* brought in to fill labour gaps complained of the relations between



Agriculture in S. Paulo State.

' Cutting sugar cane.
Rice cultivation.
Coffee gathering.

themselves and the *fazendeiros*; realizing that the existence of friction and subsequent scandals would defeat their object, the São Paulo Government put machinery into working order, known as the *Patronato Agrícola* which adjusted differences, looked into social conditions, and took in hand the work of giving medical care and schooling to immigrants. The Italian has remained upon coffee fazendas, acquired land and coffee trees of his own or taken up commercial work in the towns, rather than remained in *nucleos*; he has identified himself with the modern progress of South Brazil, taken up manufacturing, built himself some of the most splendid and extravagant houses in São Paulo city, famed as it is for luxurious dwellings; the Avenida Paulista, pride of São Paulo, was "built on coffee," and much of the wealth displayed there is Italian wealth, created during the last twenty-five years. The year of greatest immigration in Brazil is said to have been that of 1891 when out of a total of nearly two hundred and seventy-six thousand, about one hundred and sixteen thousand were Italians; their influence upon prosperity in São Paulo may be estimated by the fact that more than one million out of the State's three million population are of Italian blood. No other state has so systematized immigration, perhaps because none had the pressing need and the immediate rewards to offer, as has São Paulo; she no longer pays passages on steamships, but she maintains free hotels in Santos and São Paulo city, where five meals a day are given, good airy rooms, baths, etc., and where immigrants are lodged for a week or until work is found.

Preponderant as are the numbers of Italians, they are by no means the only southern settlers of the last

fifty years; Poles and Russians came in notable quantities in the late 1870's and early 1880's, settling in the Paran  uplands as well as in *nucleos* in S o Paulo. At the end of the century there were two thousand Russo-Germans from the Volga, farming land on methods of their own in the neighbourhood of Curitiba; an obstinate folk, they insisted upon tilling prairies like their own steppes instead of choosing forestal land, shared all goods on the Russian communistic plan, and gave the Brazilian authorities so much trouble that there must have been sighs of relief when bodies of them deserted the *nucleos* and demanded to be sent back to Russia. From those who stayed has grown up the tribe of Russian carters who do the road-transportation work of the high Paran  plateau; there are groups of farmers, too, both Russians and Poles, who share land in common and are raisers of wheat, their favourite rye, and other cereals; some have taken up the business of gathering and curing *matte*, the "tea" which South Brazil grows and exports to the Argentine.

There is one specially thriving Russian settlement to be seen in S o Paulo state, at Nova Odessa; the wooden buildings are Russian in-type, the tall churches are like pictures from a traveller's Russian notebook, and the institution of the samovar and the huge family stove is clung to. These people are great lovers of land, and its possession has contented them; as yet there is little mingling with the social or political life of Brazil.

The system under which land is made over to colonists demands more explanation than space permits; S o Paulo, briefly, only sanctions the establishment of *nucleos* near a railway line or navigable river, with an eye to marketing, and has inserted colonization clauses

in more than one railroad concession to help develop these settlements along the route; lots are never, originally, of more than fifty hectares, and may be half this size if quite close to rail or river; "urban" lots are granted to settlers with money in hand to start a business, and "rural" lots to intending agriculturists; nobody can obtain a lot unless he has a wife and family, but sons twenty-one years old can also obtain grants while bachelors; payments are made on easy terms, generally at the end of each harvest for five successive years, prices varying according to locality from a few milreis to a couple of hundred per hectare—roughly speaking; I have never heard of unfeeling treatment in cases where settlers are unable to keep up payments in bad years, but encountered many stories of help given by the authorities. When the male head of a family dies before payments are complete, the widow and family are handed clear titles if three quarters of the debt has been liquidated, and if ability to continue work is demonstrated; if not, the family is sent back to Europe at State expense. Rebates of ten per cent are given to settlers able to pay on taking up land.

Following this plan, it happens that for several years after the foundation of a new centre the colony is in debt, becoming *emancipado* as the obligations are paid off; São Paulo state is dotted with pleasant examples of these "emancipated" colonies, today flourishing agricultural regions well-farmed by the industrious and ambitious Europeans, adding enormously to the productivity of the State. At the end of 1915 the State was acting as god-mother to half a score of *nucleos*, of which the most promising are Campos Salles, Jorge Tibirçia, Nova Europa, Nova Veneza, Gavião Peixoto,

and the Martinho Prado group. In the same year, the President's message states, two hundred and ninety-three colonists completed payments on their lots and received definite titles in place of the provisional ones first issued: over one hundred and eighty-five contos was paid on lots. "The total population still under State administration is 13,793 persons, who occupy an area of 54,666 hectares; of these over 14,000 are in cultivation, yielding produce worth 1800 contos of reis last year," said Dr. Altino Arantes (July, 1916). Twenty thousand people came into the state in 1915, of whom six thousand were Portuguese, four thousand Spanish and four thousand Italian; this is but twenty per cent of pre-war average immigration to S. Paulo.

In the course of years very many colonies have developed into regular towns, long since "emancipated;" São Bernardo, Sabaúna and Bom Successo are notable instances, while the capital city itself has reached out and absorbed *nucleo* hangers-on to her spreading petticoats.

One of the interesting recent experiments of São Paulo was the cession of some twelve million acres of coastal land to a Japanese company with the object of creating an agricultural colony with Oriental brains and labour. The organizing syndicate, with the approval of the Japanese Government, was formed in Tokio in 1913, used Japanese capital, emigrants and ships, and has already settled several thousand people. Studied preparations and soil experiments were made before any colonists were carried over. Practical results so far have included a large addition to Brazil's production of rice, while the resurrection of the once flourishing tea industry is also said to be in sight. This Japanese colony is notable for its tactful introduction: wishing to

avoid even the chance of friction, the organizers stipulated its location in a spot which, able to communicate by water with markets, does not rub shoulders with other centres of population. Iguape is reached either by small steamers from Santos, or by rail from Santos to a spot on the river Iguape communicating with the colony by riverine boats, but little is heard of the Japanese settlement in São Paulo; they live to themselves and their chief appearance is in statistical reports. Besides the members of this agricultural colony there are at least another eight or ten thousand Japanese in Brazil, chiefly house servants, greatly liked for their quick, sophisticated resource.

Apart from the serious, long-continued work of the São Paulo authorities to win labour from abroad, there is still a remarkable amount of support given to immigration by the Federal Government; *nucleos* to the number of twenty are supervised by the authorities, seven of which have been "emancipated" while thirteen are still paying for their allotments. The seven free centres, Tayó, Ivahy, Jesuino Marcondes, Itapará, Iraty and Vera-Guarany, in Paraná, and Affonso Penna in Espírito Santo, contain nearly 33,000 persons, the remaining thirteen counting 19,000 persons: together the colonies had an agricultural yield in 1915 worth 14,223 contos of reis, and own livestock valued at 2,427 contos.

The State of Minas Geraes has made repeated efforts to encourage immigration and spent large sums upon propaganda and the establishment of *nucleos*. She has under supervision sixteen state colonies, with a total population of 26,000 persons, agricultural production from the lands under cultivation amounting in 1915 to

the value of 3,155 contos of reis. There are also within the state borders two Federal colonies, one of which, João Pinheiro, has freed itself from indebtedness and is on the way to become an important agricultural and stock-raising centre; these two *nucleos* contain over two thousand persons.

In Rio Grande do Sul colonization has been seriously checked since 1913, but there are two important centres under State control which call for mention: one is the Guarany *nucleo*, in existence for a quarter of a century but counting only 25,000 inhabitants because it is off the line of communication with state markets; its position is strikingly contrasted with the Erechim colony, six years old, planted on the Rio Grande-S. Paulo railway line when the latter was opened to traffic, and which today has over 30,000 population grouped in six or seven bright little villages.

In 1915, when entries from abroad were checked on account of the war in Europe there were still immigrants from Portugal to the number of 15,000, 6,000 Italians, nearly as many Spanish, 600 Russians and 500 "Turco-Arabs:" also some two thousand Brazilians were moved from the "scourged" districts of the rainless north and sent south. From 1820 to the end of 1919 the number of immigrants entering Brazil has been as follows:—

Italians.....	1,378,876	French.....	29,665
Portuguese....	1,021,271	British.....	28,798
Spaniards.....	500,378	Japanese.....	18,402
Germans.....	127,321	Swiss.....	11,376
Russians.....	105,225	Swedes.....	5,502
Austrians.....	79,302	Belgians.....	5,289
Turk-Arabs....	54,120		

In addition, official lists give another 200,000 of "diversas" nationalities and a margin must also be allowed for persons who did not enter as immigrants.

Where is the future immigrant of Brazil to come from, and to what part of the country is he to go? I have put this question frequently to Brazilians, and have almost invariably received an answer to this effect: "We want white immigrants, and they can settle healthily either in the cool south of Brazil or on the high interior uplands." The sertões of Matto Grosso and Goyaz will not attract foreign settlers until there is better communication; the land is there, but the markets are not available. But there is land and to spare still in São Paulo with its network of railways and good riverways, and there is excellent cereal and cattle land in Paraná, Santa Catharina and Rio Grande do Sul, for the northern-born, who cannot face a semi-tropical climate: for him who can face it—as the Texas cotton-grower should do—there are extensive regions farther north in Pernambuco and her sister states. The extreme north is not fitted for white, Anglo-Saxon or Latin, families, and although single men can live healthily in such latitudes for many years, the life of such tropic exiles is not good for the individual or for society. Coloured or Asiatic colonists have been suggested for the Amazonian valley, but it is at least doubtful whether the Brazilian Government would favour such plans, or whether, in view of the fertility of the native population, such introductions would be necessary; saving babies by improved sanitation would solve the problem better than any other method of populating.

The question of where white immigration is to come from is a difficult one; after the close of the European

War, there was an exodus from Russia and the most troubled regions of Central Europe. But on the other hand the formation of new States created an appeal to national feeling that kept at home as creative builders many men who would otherwise have been, probably, among the emigrants. São Paulo received in 1920 nearly 45,000 immigrants, the bulk of all entrants, and has added considerably to the southerly Japanese colonies producing rice, silk and tea; and the conclusion, in late 1921, of an emigration treaty between Brazil and Italy immediately set flowing a strong tide of Italian workers.

Many ex-service men with camp experiences are still looking about them for the country offering most to farmers and stock-raisers. To such men there are few parts of the world which offer as much as does Brazil, with her sincere invitation to foreigners, square dealing, stability, and rewards for enterprise. The lack of development along certain definite lines is Brazil's best recommendation to the enterprising and persistent.

No seeker after *dolce far niente* should come here. No thought of tropic paradises should obscure the vision of the newcomer. Brazil is a good country for the worker, with wide southern lands where careful cultivation will bring excellent results; it is a really free country of tolerant views as well as of wide spaces. The foreigner who comes here to work, to develop, will feel himself remarkably soon at home in a friendly atmosphere, and if he cares to identify himself with progressive movements he will be warmly welcomed; a very long list could be made up of high-class foreigners who have attained not only to wealth but to positions which proved the open mind and confidence of the Brazilian authorities. Naturalized foreigners are eligible to the legislative assemblies of Brazil, and whether naturalized



The Barra Road, Upper City, Bahia.

Resaca along the Avenida Beira Mar, Rio; Morro da Gloria in background.

On the Upper Amazon.

or not foreigners enjoy precisely the same rights and privileges as Brazilians before the law.

For the mining engineer, the stock-raiser, the expert agriculturist, the fruit-grower, there is plenty of room in Brazil; along certain special lines his work is much wanted, and he can look forward to getting a better return for his investment of personality and cash than in most places in a world that has not many great untouched spaces left. The pioneer, hardy and determined, has still a chance in Brazil.

CHAPTER III

SOCIAL CONDITIONS

ONE afternoon I sat in a street-car of the Copacabana line running to and from the heart of Rio de Janeiro city. As we approached the Avenida and paused at a sharp turn at the regulator's signal, a small boy poorly clad in cotton clothes got on to the front platform with a dinner pail in his hand. He set it down, removed his cap, and bent his knee as the motorman, with a swift smile at the child, extended his right hand. The boy respectfully kissed it, replaced his cap, and jumped down.

The little incident was typical of the wide spread of gentle manners in Brazil; it is here usual enough to see elderly bankers kiss the hands of their parents, but courtesy is not confined to cultured classes. One may in Brazil depend upon a street cleaner as much as upon a senator for chivalrous politeness. A stranger may address any passer-by in a Brazilian street in the most execrable Portuguese and will almost invariably receive serious and kindly attention: it is said that the Brazilian with his agreeably poised attitude to life "laughs at everything except a stranger who is speaking bad Portuguese."

I do not mean that strangers are treated with special courtesy; good manners are habitual. Brazilian men meeting each other in the street half a dozen times in a day, lift their hats to each other: no one, obliged to step past another closely on a street-car, but will raise

his hat and murmur "*Com licença!*" A woman walking down the narrow streets of the older cities or older parts of the rejuvenated cities will always find her path cleared by men who step aside into the road with hats in their hands. If she happens to be very pretty looks will follow her and whispers may, but in my opinion the ordinary woman with quiet manners is safer in Brazilian towns than in most centres of population in the world, may break all the small rules with impunity and may always depend upon the grave kindness of the Brazilian. People of less punctilious societies are apt to speak with a degree of contempt of "surface politeness," and to say that they prefer roughness and a good heart; generally this kind of remark is a clumsy apology for boorishness, and as a matter of fact a good heart is quite as likely to exist under a courteous exterior as under a discourteous one; a habit of consideration for others in speech and small actions is without doubt good training for any variety of heart and head. The Brazilian is in his mental attitude an inheritor not only of Latin tradition in general but of French ideas in particular: Paris is his Mecca, French literature and French science and French art the inspirers of his youth; more cosmopolitan than the Portuguese born, because he is in close touch with all Europe as well as with the Americas, quite minus the feeling that makes the Spaniard love bull-fights, the Brazilian has grounds for his claim as the brightest spiritual heir of Latinity. His excellent manners are a part of his heritage.

Apparently, the very considerable additions to the Brazilian population by immigration during the last hundred years have made little difference to Brazilian society; it is true that the Englishman with his tennis

and football and his rowing-clubs has introduced and popularized sport, so that today there are thousands of young Brazilians taking part in these pleasures and it is true that the influx of artistic French in the reigns of the two Emperors affected and stimulated sculpture, painting and writing in Brazil; in each case these were entries into Brazilian society, the new element arriving with a recognized status as members of important firms or with a semi-official position. There has been family mingling, many English and French choosing wives from distinguished Brazilian families, and in this way the influence of European ideas frequently has its effect on the education of the children of such unions. To a less noticeable extent almost every nationality is found in Brazilian society, for this is a country which has always welcomed the stranger of distinction, but no race has impressed itself so firmly upon national characteristics as the Franco-Latin. Immigration, properly speaking, the systematic colonization with which São Paulo supplied her coffee lands with labour and Rio Grande and Paraná settled their open spaces, and Minas tried to supplant negro workers, has affected Brazilian social conditions scarcely at all. Generally isolated in wide areas, often with no communication with the outside world except by mule-trail or river until the railway came a few years ago, the organized colonies of Russians, Poles, Basques, Bessarabian Jews, Japanese, Swiss and Germans lived their own lives, retaining perforce the language and customs of the lands from which they came. The Italians, employed on great *fazendas*, were more in contact with Brazilian life than any other race, and even they keep their own speech together with newly-learned Portuguese, eat Italian

food and read Italian-language newspapers printed in Brazil. Not until the development of industry brings the colonies into closer contact with each other and with Brazilian centres of old standing will the Galician and Arab affect any society but of his own race. No attempt has been made, probably wisely, to force these settlers into the Brazilian national communion; they were needed to fill spaces, to bring land into cultivation and develop the wasted resources of an enormous land: they have done Brazil this service, and Brazil in return respects their feelings and traditions. One reason for this lack of interference with the colonies was that Brazil possessed little machinery which could have brought about a marked change: but deliberate policy also entered into the question. It was realized that a change would come about with the passage of years, when the second or third generations grew and mingled in a common society, Brazilians born and bred, and that meanwhile Brazil was too big to fear the effect of these *nucleos* with their strong retention of foreign loves and habits. Broadminded enough to sympathize with such feelings, the Brazilian knows that no man worth his salt forgets his native land; his idea was expressed by the genial writer, J. M. de Macedo, when, speaking of the French who made fortunes in Brazil and returned with their savings to France, he said: "If it be a sin to love one's own country better than any other country, then am I a sinner too!" It is in fact because the Brazilian has so keen a devotion to his own beautiful land that he comprehends the home-love of the immigrant.

Class distinction still reigns in Brazil to a certain degree, as may be expected in a land where slavery

existed until twenty-eight years ago, and which twenty-seven years ago still had an Emperor and a Court with a retinue of nobles. These nobles retain their titles still, except in cases where formal renunciation was made, but a provision was made at the establishment of the Republic that they should not be inherited. It is an example of the liberal spirit in which the break was made, and the absence of ill-feeling towards the Empire, that Brazil thinks as much of her *Commendadores*, *Conselheiros*, *Barões*, *Viscondes* and *Condes* as she does of any newly distinguished *bachelors* of today. Dom Pedro II gave these titles, very often, in recognition of some special service to Brazilian development, and it is for this reason that, encountering the Conde de Leopoldina, we find him to be an Englishman surnamed Lowndes. When the Princess Isabel (Condessa d'Eu) celebrated her seventieth birthday in the summer of 1916 the Brazilian newspapers printed long notices speaking with appreciation of her regencies over Brazil, and acclaiming her act in freeing the slaves of 1888; a few months previously a monarchical society held meetings in the capital, their sayings and doings were reported in the public press without any excitement, and the trend of editorial comment was, "Well, with the republic in such a muddle, it is no wonder."

It is needless to say that the restoration of a monarchy in Brazil is quite unthinkable, and that the society's existence is more interesting than important, but I mention it to show the amused tolerance of the Brazilian towards other people's opinions. He has a detached, sometimes cynical attitude, believes in frank discussion and the airing of ideas, and together with a markedly democratic habit of life retains a European

respect for tradition and authority. In Rio, the intellectual centre of Brazil, the influence of the administration is very strongly felt, and it is the focus of interest and activity: the Brazilian takes a passionate part in politics, criticizes the Government when and where he thinks fit, but will never do anything to undermine the power and prestige of the administration. With but one notable exception the heads of the Brazilian Government have been men of such ability and force of character that they have thoroughly earned the confidence of the thinking classes. From the cultivated caste in Brazil is chiefly drawn the political group: there have been exceptions, as in the case of Pinheiro Machado, but as a rule the reins are in the hands of a distinct social element, descendants of white Portuguese families and frequently men of great intellectual strength. The names of the Visconde de Rio Branco, Conselheiro Rodrigues Alves, João Alfredo and Affonso Penna are but four out of a long list of statesmen of the first rank in Brazil. The ruling classes are almost always great landowners, *fazendeiros*, and there was a time when sons of such families destined themselves to politics, agriculture or one of the "professions;" today commercial careers are sometimes chosen—perhaps partly because the planter of coffee or sugar is often necessarily a mill-owner and shipper as well—as Brazil becomes more industrialized, but although these young men may enter other than the traditional spheres, it is seldom that theirs is invaded from the world of industrialists or *commerçiantes*. The latter are, indeed, largely recruited from the foreign element; shop-keepers as well as commission agents and dealers all down the coast were once largely British and French, but now

the energetic Portuguese-born trader, with the keen Italian and Spaniard, and the still more insinuating Syrian, has absorbed a marked proportion of the retail business.

Below the commercial element comes that of labour, stratum of entirely different composition; it differs too in varying localities, from that of the south, where slavery tailed off in São Paulo, never penetrating the more southerly states, and where white labour of immigrant origin performs field work, to the central section where the *mestizo* (mixed blood) of white and Indian or, about Bahia and Pernambuco, white and negro, blood is the worker; in and near Bahia itself thousands of pure-blood negroes or mulattos form the labouring class, to the almost total exclusion of any other. Farther north the negro element fades out and the Indian mixture predominates in a wiry strain which furnishes all the labour of the Amazon valley.

Upon this great mass of mixed-blood labourers the educational systems of Brazil make a certain if slow impression. Intelligent and apt, docile if conciliated and stubborn if crossed, the *mestizo* has some excellent qualities; the indolence of which he is often accused is sometimes want of direction, and sometimes the result of ill-health in certain regions, disappearing when the enervating malaria and ankylostomiasis are conquered, exactly as in the South of the United States where the same troubles are common. With better sanitation in the crowded warm regions, and persistence in good schooling, the *brasileiro* of the labouring classes would not need supplanting with introduced immigrants. Between him and the legislator there is a great gulf fixed; its existence might be dangerous were not the

habit of the Brazilian gentle; it can be bridged only by education. "We have no organization for the expression of popular opinion," declared a Brazilian writer recently. "The statesman, the government official, the legislator, the administrator has to be a kind of powerful Jehovah, capable of creating worlds out of nothing . . . unless the bachelor (*bacharel*—"doctor") president, the bachelor governor, the bachelor minister or the bachelor deputy should sally forth through Brazil (*saíam por esses Brasís afóra*), over mountains and valleys, to enquire at the window of every farm, at the door of every store, at the entrance of each factory, in each lacemaker's shop and at each blacksmith's forge, what Agriculture, Commerce, Industry and the Proletariat wish for their practical and effective betterment. . . ." At least it can never be said that the faults and lapses of Brazil are not understood and discussed by her own educated classes; there is no country where self-criticism is more hearty. During the early part of 1916 a party of specialists in tropical maladies from the Rockefeller Institute passed through Brazil and made some investigations; one of the weeklies of Rio famous for its cartoons and skits on public affairs remarked that the visitors need not have come to Brazil to study malaria—they would find that in a hundred places: they should study the troubles that were really peculiar to Brazil. It gave an illustrated list: among the items was the "national long tongue"—we talk too much; another was *bacharelismo*—everyone in Brazil wants to be a "Doctor" of medicine or law or philosophy. It is a disease not altogether limited to Brazil, despite the *Malho*.

Cartoons in Brazil have a point of interest in addition

to their wit, in the presentment of a national figure, "Zé (José) Povo." Zé Povo is "the people," quite distinct from the dignified figure of the *Republica*, a lady in draperies crowned with the Phrygian cap. Zé is the man in the street who stands by and makes acid comments; he has no counterpart in North American or English journals, but speaks his mind much as "Liborio" does in the Cuban humorous-political papers. No one can say that the press is not free in Brazil.

Industrial expansion in Brazil will be the great amalgamator of the grades and divisions of the population; colonists of foreign origin cannot continue to live in separate nests, commercial fortunes will blend society, and the expansion of agriculture will sooner or later mean the evolution of the *sertanejo* into a modernized, trading farmer; as the hills are opened for metals and the forests are entered for hardwoods and dyes and latex, the millions of Indians of the interior must be brought into line, or, retreating, eventually die out—the worst solution of his case and probably an unnecessary one. But at the present day there are many distinct types among Brazilian populations, and of them that of the *sertanejo*, the farmer of the interior, the *sertão*, is not the least interesting. Here on the wide uplands of the plateau he lives very much as Isaac lived, his world about him, his home, servants and herds his chief interests; simple, philosophic, intensely hospitable although reserved and proud, he makes little money but by his cattle, and wants little. His bodily needs are few, his furnishings of the simplest; his food is mainly the inevitable *farinha de mandioca*, milk products, beans (*feijão*) and eggs and *carne*. He may be the owner of great expanses of land, but he will seldom sell or divide

it and there is no other life that he will endure and live. In touch with the open sky, the broad horizon before him, the *sertanejo* is of a class apart; his is a simple and a dignified figure.

Brought to town, through acquisition of money or the wishes of his womenfolk, the farmer of the interior is a peg for many witticisms of the townsman; he is a "caipira," a countryman, a hayseed, and endless amusement is obtained at his expense. One of the Rio weeklies, the *Careta*, once ran a series of illustrated adventures of such a farmer who is supposed to come to Rio de Janeiro on a visit with his wife and pretty daughter, and who takes in the "sights" of the Capital from the countryman's angle.

A simple *camaraderie* prevails in the upland interior, where little money passes and barter of goods is the most common form of exchange; it is frequently impossible to hire labour, and as a consequence farmers and their sons invite the help of their neighbours when field work is needed, giving their own time in turn when occasion arises. No distinction between rich and poor occurs in a society of such friendly simplicity.

In the cattle regions there is a special ceremony every year, for rounding and branding cattle, known as the *feira dos bizerros* (calf branding) and the *apartação do gado*—separation of herds, frequently running with those of other *fazendeiros* over unfenced country. All the neighbours arrive at the farm which is thus counting its stock, families making it an occasion of friendly reunion. During the evenings of the two or three days of *feira* there is a continual round of coffee-drinking and eating, many a marriage is arranged and consummated;

at the close of the work there is frequently a series of competitions of skill in horsemanship, the clever performance of the *vaquejada* or *derrubada* always exciting a critical audience. Horsemen, mounted on well-trained animals, post themselves at the gate of the corral where bulls have been shut up for a day or two; the bars are let down and when the cattle rush out each of the horsemen tries to seize a bull by its tail and throw it to the ground—success largely depending on the cleverness of the horse in avoiding the rushes and struggles of the bull. The last night is one of continual dancing and temperate feasting, the flute and violin sounding until dawn. It is a little curious that these instruments, with the guitar, are the favourites of the musical peasantry of Brazil, and that the exquisite marimba of African origin, carried by negroes into Central America and there enthusiastically adopted by the Quiché-Cachiquel natives, should not have also found a home in the southern continent.

Among the other figures of the *sertão*, created by the absence of mechanical transportation in a series of great regions, is the *tropeiro*, the leader and frequently the owner of a troop of mules carrying the products of the interior to market. A good *tropeiro* is entrusted with the marketing of the cotton crop of a fazenda or even a district, and he will carry cash for long distances, settling accounts, making purchases; his mules are trained performers who know their work and make themselves understood if there is anything wrong with one of their number. In the north of the Brazilian promontory—Bahia, Pernambuco, interior Ceará, Maranhão and Rio Grande do Norte as well as the hinterlands of the central states, the *tropeiro* undertakes the transportation of

much of the interior crop of cotton, sugar and tobacco.

He is doomed to extinction as the steel arms of the railroads push out into the interior, but his day is not yet done.

Public lotteries are to the Brazilian what horse-racing is to the Englishman and baseball to the North American. It is a form of excitement, with a chance of betting something and winning a great deal, an interest apart from the ordinary round of business. Opinion is not popularly opposed to the system in Brazil, any more than it is in, for instance, Italy, and in like manner it is conducted by the Federal Government, is a recognized source of revenue, and many charities and other worthy institutions supported by the authorities derive their main income from it. Few people express any adverse sentiments to these regularized lotteries, but an amusing offshoot from it, illegal, forbidden, pounced upon now and again by the police, generally denounced by the press, and indulged in by everyone, is the famous *bicho*. A *bicho* is in Brazil any kind of animal or bird or insect—everything living is popularly a *bicho*—and in this underground lottery groups of numbers are represented by a deer or monkey, butterfly or tiger, etc., something more interesting than a bald set of figures. The *bicho* was of independent origin, with twenty-five animals represented, but nowadays depends upon the government results, and is really a gamble on a gamble, but with the advantage that combinations and groups can be played on, and very small sums staked. You can stake a few pennies on your favourite humming-bird again and again without feeling the loss when the *anta* persists in coming up instead,

and there would be little harm done did not servants sent to the market get the *bicho* habit so badly, together with shoe-shiners and waiters and all the working class, that in its acutest form "playing on the *bicho*" becomes an obsession equal to drug-taking. Tickets for the *bicho* can be bought at many newsdealers', in scores of shops, little banks and financial houses run it, and some daily papers print pictures of the winning animals: it is well not to stake more than a milreis or two, because while a modest winning will be paid your gain of a conto would probably be met by the assurance that the ticket-seller cannot pay. In such a case there is no redress as the whole thing is illegal.

Its chief objection in the eyes of the authorities is that it does not yield a public revenue, and that people spend, in the aggregate, more money on the *bicho* than on public lotteries which are sources of governmental income. Nevertheless, denounced, raided, and occasionally prosecuted, the *bicheiros* continue to exist and to furnish a mild form of excitement and adventure. I do not think that lotteries are more objectionable originators of a thrill than cocktails and whiskies dear to the Anglo-Saxon; in regard to heady liquors the Latin is universally abstemious, and the rule is not broken in Brazil.

Rarely does the Brazilian born and bred drink anything stronger than coffee, and this he takes, in little cups in the innumerable *cafeterias* of every city, many times a day. Since the established price of a little cup of hot, very strong black coffee is but a *tostão* (two U. S. cents) there is no great extravagance about this. At family meals a little wine, generally imported from Portugal, France or Italy, is on the table: since Rio Grande has been trying her hand at wine-making the



Monroe Palacio, on the Avenida Rio Branco, Rio de Janeiro.
Municipal Theatre, São Paulo City.

bottle may contain *vinho nacional*; in any case it is sparingly used. The younger generation has taken to a limited extent to the whisky introduced by the Britisher, the beer of the German, now very well brewed in the country, and the cocktail of the newcomer of North America, but he appears to drink these exotics more with a desire to be in the fashion or a "good sport" than because he likes them.

Deliberate drinking is almost confined to the *festas* beloved of the *mestizo* and mulatto populations, especially celebrated in agricultural districts, when the Brazilian-made *cachaça*, a kind of rum made from sugarcane, is liberally consumed. Its festive use seems to be a survival of Indian custom, for the natives of the coasts and forests in pre-Portuguese days made a fermented liquor (from *milho* = maize) for special occasions, and their descendants as well as the negro element, also great lovers of celebrations, regard an occasional period of revelry as a right. The influence of Christianity has succeeded in identifying these festal occasions with, and confining them to, saints' days and other Church celebrations, but their root is more primitive.

Religion in Brazil has never been a matter for dissension or the cause of social upheaval: the original *donatarios* brought chaplains with them as a matter of course, missionary Jesuits and members of Franciscan, Benedictine, Dominican and other Orders gradually founding establishments in the settlements. With regard to the natives their task was easy, since there existed no definite religion to be eradicated, and, except when the work of the missionaries interfered with the designs of the planters, cordial co-operation existed between the *padres*, colonists, and authorities; many

of them had a hand in political matters, were emissaries between the mother country and Brazil, and enjoyed marked prestige. No Inquisition was ever established in Brazilian territory, and a bone of contention thus avoided. With the erection of the Republic in 1889 Church was separated from State, probably much to the betterment of conditions, for considerable criticism of clerical ways and habits had grown up, laxity following upon security; put upon her mettle as an independent organization, and faced with the competition of other permitted forms of belief, the Roman Catholic church in Brazil is said to have performed much needed purifying.

Tolerance is a long-established habit. Protestant forms of Christianity exist undisturbed, and although their temples are very generally attended exclusively by the foreign congregations responsible for their origin, and proselytizing is not encouraged, their social work is undoubtedly useful. In the southern organized settlements each community practises the form of faith of the home-land, the Russians of the Greek church, Germans with their Lutheran establishments, and so on; there is not the slightest interference—religious intolerance is indeed unimaginable in Brazil. It has been said often of the Brazilian that this attitude arises from indifference, that the practice of religious observances is left to women and children and that the grown men of communities are cynical—next-door to what used to be called “agnosticism” by the professional European unbelievers of the past generation. This is, I think, only apparently true. It has an appearance of truth in that the churches are largely filled with women; it is common for Brazilian men in conversation

to affect an airy amusement before the claims of religious bodies: but due allowance must be made for French influence. Almost up to the time of the European War there was a parade of emancipation from clerical leading strings by the intellectual French, yet the course of the conflict has witnessed a spiritual awakening, the resurrection of something dormant; the France of today is probably more sincerely religious than she has been for many a century. The cynicism of masculine Brazil may be no more deeply rooted.

As in France, there is in Brazil no reaching out after new religions comparable to the tendency in the United States which is so curious an indication of emotional phases: it is impossible to conceive Brazilian reception of Mormonism or Zionism, for instance. The only notable example of serious adoption of a new faith is found in the extreme South, where the principles of August Comte have taken root, and the *riograndense* of the educated ruling class is generally a Comtist.

In certain of the older, more northerly towns of Brazil the proportion of Roman Catholic churches to the population is remarkably large, particularly in Bahia, Pernambuco and its elder sister, Olinda. That they are able to exist is largely due to the negro and mulatto element, for here as in all other parts of the world where he has been taken the negro is a fervent admirer of almost any kind of religion. It is the swarming coloured people of Bahia, crowded in the cobble-paved, half-lighted rookeries of the lower town and the tilted streets leading to the upper town, who make it possible to keep open the doors of that city's four hundred churches. In these centres all the many saints'

days are kept with fervour, but it is in the interior that tradition and a simple faith in "white magic" survive; here that the ceremonies of All Hallowe'en are performed by maids of the sertão, and spells invoked. St. John's is one of the popular days, with its legends and traditional celebrations, when groups of boys and girls, mingling on this occasion as youth of Latin inheritance does not often mingle, crowned with leaves and flowers, go down to the river banks to wash, singing as they go, because as the verse says: "Nessa noite é benta a agua, Para tudo tem virtudes." Fires are lighted outside each house in homage to St. John, and at these green corn is roasted—the traditional *milho assado na fogueira*. Over the hot ashes of these fires the faithful walk barefoot without being burnt. . . .

On this night lovers make their tests of the fidelity of the sweetheart, and girls try to discover their fate in marriage; St. John, however, is not the only aider of candidates for matrimony—there is "São Gonçálvo," a great lover of lovers, and St. Anthony, famous in North Brazil for his power in binding uncertain swains. A well-used prayer to this saint is quoted by Pereira da Costa in his *Folklore Pernambucano* and begins: "Father St. Anthony of Captives, you who are a firm binder, tie him who wishes to flee from me; with your habit and with your holy girdle hinder the steps of Fulano as with a strong cage. . . ."

St. Raymund is another helper of solitary maidens, and a guaranteed prayer of noted efficiency is addressed to him; translated freely it runs:

Miraculous Saint Raymund,
You who help everyone to marry,
Please tell Saint Anthero

That I wish to be married soon
To a very good-looking young man,
In the church of Saint Benedict.

Before the altar of Saint Rosa
I want to give my hand as a wife
To him whom I love so much,
Asking Saint German
And also Saint Henry
That I shall be happily married.

May Saint Odoric permit
That the young man be rich,
And Saint Augustine grant
That he loves me very much
And I beg Saint Robert
That he may be clever.

Also I pray Saint Vincent
That the wedding may be soon,
Begging Saint Innocencia
Not to let me lose patience,
And asking Saint Caetano
That it may happen this year.

I have already prayed Saint Inez
Not to let this month pass,
And Saint Mariana,
That it may be this week—
And I beg the Virgin Our Lady
That it may be this very hour!

From which it will be seen that the saints are expected to be useful, and that *festas* of the church are agreeable to these young people, leading in the older centres a rather restricted social life.

Women in Brazil occupy a position out of which they have been forced or have voluntarily emerged in many countries. It is for many reasons a very happy life, for, withdrawn as she is, the Brazilian wife and mother has complete authority over the wide sphere which tradition has so long assigned to her. It is a moot point whether women in other lands would seek emergence from that circle if circumstances did not send them from it; the salary-earning women of Western Europe and North America perhaps do not always realize that theirs is not altogether a choice between home and independence, that they work because they must work. The exigencies of climate, as well as modern education, send women out to the ranks of the workers in lands where there are at least as many women as men.

In Brazil there is no such equality of numbers. The list of men is always much longer than that of women, chiefly because of the stream of male immigrants who arrive in the country without families, and, earning good wages, set about the acquisition of a home. The predominant classes of such immigrants are Portuguese, and these men, speaking the same language and with close affiliations to Brazil, readily seek wives among the Brazilian families to which their status gives them entry. Little social adjustment is needed in such unions, much less than in the case of the marriage of Brazilian girls with foreigners of a totally divergent origin.

The Brazilian girl is said to be precocious, and she is certainly the possessor of tactful manners and distinct aplomb in her early teens. If she is a member of a wealthy family she has generally spent some years in French schools, and it is not unusual to find beautiful

young women of nineteen or so who have been educated in Germany, France, Switzerland and England, and who speak four or five languages fluently. All educated Brazilians speak and read French, most of them understand but will not speak English, and nearly all those from the more southerly parts of Brazil have learned German for commercial reasons or have been partly educated in Germany. Educational affiliations with the United States are new, and apply to young men more than to girls; technical training in engineering or trading is sought increasingly in North America for business reasons as commercial exchange develops, but the closely guarded, often conventual training of the girls has a very different aim. The young Brazilian girl is frequently a good horsewoman, for life on a farm is almost sure to be included in the tale of her early years; she is often also a good swimmer. Music is an invariable part of her education on which stress is laid, and I have heard some brilliant executants among Brazilian women. Dressed in the height of Parisian fashions, chic, demure outside her family and full of gay camaraderie with her endless lines of brothers and sisters inside the home, the Brazilian young girl is a very charming creature. She has the loveliest dark eyes in the world, and often possesses a very fine clear pale skin.

Married, she seems to resign herself contentedly to a purely domestic life; one enters homes in Brazil whose handsome hostess entertains delightfully, always exquisitely dressed, and sparkling with the big diamonds that are considered the simple right of every woman in Brazil—my washerwoman in Rio had a pair of brilliant earrings that cost three contos of reis, representing her life's savings—but this same smiling hostess will never

be seen outside her spacious home and gardens, except upon the formal occasions when she is obliged to make an appearance in public with her husband. She not infrequently displays a tendency to *embonpoint* early in life, the result of lack of exertion and the eating of the extraordinary and delicious *doces* (sweets and candies), the creation of which is a special art of Brazilian women, but she does not mind this at all, fearing a thin figure as the most terrible of disasters in this land where the highest compliment paid to a woman is: "How pretty and fat you are getting!" *Gorda* and *bonita* are indeed interchangeable terms.

She accepts her destiny as a mother of many children, and generally spoils them badly, at least in their infancy; the father is equally indulgent. A harsh parent is a *rara avis*, and nothing excites popular indignation in Brazil more than any story of hardship in which children are concerned. Passionately devoted to her babies, the Brazilian mother stays within her home, is the gracious sovereign of her circle, and seems little disturbed when it expands notably. This expansion is likely to happen if any relative either on her side or her husband's falls upon evil days; in that case he will come with his family and camp out until fortune smiles again. There is no turning of the cold shoulder upon poor relations in Brazil—they are welcome to a share of the family fare, and to hammock space if beds are lacking in the case of poorer homes, secure in the knowledge that they in turn will repay this good deed with similar ones later on. The city centres have of course their more rigid social laws, but in the less restricted life of smaller towns or *fazendas* there is often encountered another variation from the harsher rules of some other

lands: this is the placid acceptance into a home of children who do not claim the mistress of the house as mother, but who receive from her bed and board and a status little inferior to that of her own babies, regular members of society. Lapses from social law occur all over the world; they are punished to a greater or lesser degree everywhere, but in some countries the innocent suffer more than the guilty; unhappy and unwanted children bear a stigma against which they rebel in vain. Brazilian opinion does not spare offenders, but it does withhold any harsh hand from innocent children. Acknowledged and treated with affection, they are given a chance in life together with the more fortunate.

Life in the two chief cities of Brazil, Rio and São Paulo, takes its hue from the European capitals with which they are closely in touch, and from which they have derived mental food for many a generation. There is little about either of these fine cities, apart from the hot summers, the brilliant vegetation, their remarkable cleanliness and the Southern Cross overhead, to distinguish them from European cities; the clothes, amusements, buildings, and literature of the population is predominantly European, and there is not much to remind the visitor that he is in tropical South America. Rio is the "intellectual centre" of Brazil, and here are gathered the scores of good writers and poets, the artists and politicians, of the country; there is a profuse and characteristic literature. If the North American writer was correct in saying that "American literature is only a phase of English literature," he would have been equally justified in saying that South American literature is a phase of French literature: yet in Brazil this would have less truth than in most parts of Latin

America, because this country has so largely developed a series of writers who take native Brazilian life for their theme. There are long lists of Brazilian novels and poems which really reflect Brazil conditions in the very varied sections of the country; I know no other South American country whose literature is so emancipated, not from French style so much as from European subject matter. There is for instance the excellent work of the Visconde de Taunay, whose charming *Innocencia* is a picture of interior conditions, and has been translated into almost every language, not excepting Japanese. The books of José de Alencar form another series of provincial pictures; Machado de Assis wrote a number of historical novels of great merit and interest; Coelho Netto, Aluisio de Azevedo, J. M. de Macedo, Xavier Marques, are among a score of names of writers who have left records of Brazilian life. If I were advising the study of a brief list of such novels, this would be a preliminary dozen:—

Innocencia: by the Visconde de Taunay. Novel of *fazenda* life in the interior—a delicate and touching story.

Os Sertões: by Euclides da Cunha. Powerful and vivid description of a page of national history, with a setting in the interior Brazilian uplands.

O Sertão: by Coelho Netto. Scene also laid in the interior, with its simple customs.

O Mulato: Aluisio de Azevedo. Deals with the position of the negro half-caste in Brazil.

O Gaucho: José de Alencar. Life of the Brazilian cowboy.

Os Praieiros: Xavier Marques. Life of the fisherfolk on islands near Bahia.

O Paroara: Rodolpho Theophilo. Exodus of the Cearenses to the rubber forests of the Amazon.

Maria Dusa: Lindolpho Rocha. Story of diamond hunters in the interior of Bahia.

Braz Cubas and *Quincas Borba*: Machado de Assis. Historical novels dealing with colonial life.

Esphynge: Afranio Peixoto. Social life of Rio and Petropolis, or *Dentro da Noite* or *Vida Vertiginosa*, by "João do Rio," also social life of the Capital.

There are also the finely written novels of Brazil's woman writer, Julia Lopez de Almeida, whose *Fallencia* is a very skilful piece of work; and no study of Brazilian life would be complete without José Verissimo's *Scenas da Vida Amazonica*, preserving tales and legends of the Amazon, and the kindly *Memorias da Rua do Ouvidor*, of J. M. de Macedo, telling tales of the early days of Rio de Janeiro.

Poets are many. The "Prince of Brazilian poets," acclaimed by public vote, is Olavo Bilac, whose *Via Lactea* is a beautiful work: he is one of the most distinguished members of the Academia Brasileira, whose President is the publicist and orator of international fame, Senator Ruy Barbosa.

Olavo Bilac is something more than a poet; he has recently made it his mission to sound a "call to arms," addressed to Brazilian young men, with the object of bringing about physical and moral improvement through military service. His addresses in the capitals in 1915 made a great stir: he later, in the middle of 1916, began a tour of Brazil, penetrating into interior regions as well as visiting coast towns, to repeat his appeal. A most admired and beloved poet, Bilac has

prestige which few other people could bring to such a self-appointed task.

After Bilac comes Alberto de Oliveira, and a long list of other dexterous versifiers; many produce charming poems, and he who wishes to have an acquaintance with classical Brazilian verse must read the output of Gonçalves Dias, who took the life of the Indians for his theme, as well as that of the lyric writer Gonzaga and the graceful Claudio da Costa.

Brazil also has a national stage. I know of no play of first-class importance, but there is an active supply of native Brazilian actors and actresses, and if their work is generally that of playing in the home-made *revistas*, and if these *revistas* are not very high art, at least they are genuinely Brazilian, and often extremely amusing. I suppose that on the stage, as in the pages of the Brazilian press, there is a limit beyond which the libel law would become active, but I cannot imagine where it is drawn; the audience rocks with laughter when well-known political personages are caricatured upon the stage—as they are lampooned in the press—and no notice appears to be taken of whatever alludes to matters of intimate family concern. Nobody in the public eye is exempt, and the result is that Brazil possesses a lively, home-made stage which is at least a beginning in dramatic craft.

Brazil has an exuberant press. There is a large number of dailies and weeklies in proportion to the population, many of the smaller journals existing to serve the purposes of some special movement, colony, or party, and there are many technical periodicals of varying merit. Grace, pungency and a frequently merciless

frankness are the chief characteristics of the free-lance sections of the Brazilian press, although there are certain staid and conservative journals whose dignity never deserts them. The first of all Brazilian newspapers was a little sheet started in Rio, soon after the arrival of Dom João, by Frey Tiburcio; it was practically a Court Journal. Two of its notable antagonists later on were the *Tamoyo* and the *Sentinella*. All of these early periodicals died a natural death, the newspaper of longest continual publication in Brazil being the *Diario de Pernambuco*.

The premier newspaper in Brazil, which is also perhaps the best in South America, although it has a formidable rival in the Argentine, is "o velho," the famous *Jornal do Commercio*, the semi-official, powerful, wealthy, and most excellent daily of Rio, with a circulation all over Brazil and reaching out as well to most parts of the educated world. It is a great paper in all senses of the word, is finely printed—this great sheet, often with thirty-two and sometimes eighty big pages, eight columns wide, printed in a language requiring the "til," "cedilla," acute and circumflex accents, constantly employed, comes out day after day almost without any typographical errors. Its reviews of commercial affairs are made with authority; it is remarkable for having no editorials, anything that needs to be said editorially appearing in the "*Varias Noticias*;" months may pass without this column containing more than chronicles of official acts and movements, but when the *Jornal* is moved to speak its voice comes in no uncertain tone. Its denunciations and pronouncements are discussed like a Papal Edict in the Middle Ages.

Anyone who reads the *Jornal* day by day, with its pages of European telegrams, its excellent letters from world capitals, its fine literary and political essays, its *Publicações a pedido* where every kind of public or private matter is thrashed out, often to the great entertainment of the reader, knows everything that is going on in Brazil, is well up in European news, but will hear only faint echoes coming from North America and these as a rule only when some distinguished Brazilian happens to be travelling there, and cables are sent south dealing with his sayings and doings. When I have enquired the reason for this lack of news from North America the reply has generally been that the news services are responsible: that the arrangements made with certain European agencies cannot be duplicated. It seems as if this is a matter needing thoughtful attention, for it is obvious that the Brazilian cannot be so deeply interested in a country about which he hears practically nothing as about others which present even trivial domestic news to him in long cables every day. The same lack occurs, of course, in the United States in regard to Brazil; if accurate, frequent information were disseminated we should not read that "in the states of Parana and Santa Catarina, in Brazil, the entire population subsists on bananas as food and are famous for their strength and endurance," or that (an item of early October, 1916) "the Brazilian coffee crop is estimated at 11,000,000 bags, the greatest ever harvested and three million bags bigger than last year's crop," nor should we see the "Girl from Brazil" represented upon a New York stage dressed, and comporting herself, much like a Carmen, and speaking Spanish; or read tales repeated in the press of the "little republic

of Coanani" near the Guiana boundary in Brazil which has "sent its army to fight on the side of the Allies." With the United States as Brazil's best customer, and, at least for the present, Brazil's greatest supplier, there should be better channels of interchange not only of information but ideas; there should be room for a Brazilian journal in New York—there is one in Paris—and for a Bureau of Information with exhibits, something on the lines of the existing Bureau in the French capital, where Brazilian hardwoods, cotton, precious stones, fibres, ores, etc., are on view. The Pan-American Union, as well as other organizations and publications with the Pan-American object in view, do sincere and arduous work which has borne much industrial and social fruit, but their labours are necessarily spread over a great field: nor can Consuls do everything, however energetic. Brazilian interchange with North America is quite important and promising enough to merit a special news service.

Other strong Brazilian newspapers published in Rio are *O Paiz*, *O Imparcial*, *O Correio da Manhã* issued in the morning, with a host, including *A Plattea*, *A Tarde*, *O Noite* and the afternoon edition of the *Jornal do Commercio*, issued any time after mid-day: the latter has had a wonderful war-review series of articles running since 1914. Very many papers of the Brazilian press, like the major part of the non-German Brazilian people, are strongly pro-Ally, and particularly pro-French, and have no hesitation in declaring their feelings, as witness the "Liga Brasileira pelos Aliados" formed by some of the foremost men of the country, but in the case of the war articles of the afternoon *Jornal* there was a serious attempt at

impartiality. It was possible thus to read first a criticism of the war-telegrams of the day showing that a distinct advantage had accrued to the Allies, while printed just below would be another analysis by a second contributor, demonstrating that the news was distinctly favourable to the Teutonic forces.

Also published in Rio are many technical papers, medical and engineering periodicals, etc., and some of the gay illustrated weeklies of very free speech, as *O Malho*, *A Careta*, *Fon-Fon*; also the *Revista da Semana*, a society paper. There are French, Italian and German papers, but the great home of a polyglot press is São Paulo, with its groups of immigrants. Here the oldest Brazilian paper is the *Correio Paulistano*, sixty years established, a daily morning paper; another in the same class and perhaps the most widely read is the *Estado de São Paulo*, while the *Commercio de São Paulo*¹ also has a high reputation. The *Estado* runs an afternoon edition, and there are many other evening papers—the *Diario Popular*, *Nação*, *Gazeta*, etc. For the Italian population there is the daily morning *Fanfulla*, the afternoon *Giornale degli Italiani* and the weekly *Italiano*. Germans have the morning *Diario Alemão* and the weekly *Germania*. Two French weeklies seem to do well, the *Messenger de S. Paul*, and the *Courrier Français*. There is a Spanish *Diario Español*, two Turkish papers, and in the colonies outside the city there are said to be Russian and Japanese sheets published. The city of S. Paulo counts eighty journals, the State counting over two hundred dailies and weeklies.

¹ Bought by the Rio *Jornal do Commercio* company at end of 1916 and now published as the *Jornal do Commercio de São Paulo*.

Rio and S. Paulo are the two chief literary centres, but every town of any size in Brazil has its newspaper. Of these perhaps the most important are the Pernambuco papers; the *Diario de Pernambuco*, already mentioned, bears the proud inscription of its age in conspicuous lettering on the front of its building in a square in Recife; it is a very good paper, and so is the *Jornal do Recife*, among several other daily sheets. Bahia has the *Diario de Bahia* and *Diario de Noticias*, amongst others, and the State Press here also publishes daily an excellent *Diario Official*.

Pará has quite a variety of papers, the *Estado de Pará* and the *Folha do Norte* probably the two most powerful. Manáos also supports several newspapers, of which the *Jornal do Commercio* and *O Tempo* appear to be most widely read.

Many imported foreign periodicals have a ready sale in Brazil, as the French *L'Illustration*, many Portuguese publications, and the *Blanco y Negro* of Madrid; nearly all the English serious reviews and illustrated weeklies are sold, and there is an increasing demand for illustrated North American periodicals of good class. Altogether Brazil has a remarkably cosmopolitan class of readers and therefore a cosmopolitan press.

Almost all the Brazilian authors of note have, at one time or another, contributed to the great *Jornal do Commercio*; this is really the cradle of much fine writing. Founded in 1827, it is today housed in a splendid building on the corner of the famous Rua do Ouvidor and the Avenida Rio Branco, the building and press equipment costing over half a million dollars.

Linked with the life of the *Jornal* for the last twenty-

five years is that of José Carlos Rodrigues, Director from 1890 until his retirement in 1915; a great student and great organizer, possessed of international prestige, José Carlos was the moving spirit of the newspaper for a generation. He is one of the eminent figures in modern Brazilian life. At seventy-two years of age he is completing his *Vida de Jesus*, fruit of long years of research.

José Carlos Rodrigues is one of the constructive Brazilians. There have been many others, as the great Andrada brothers, Campos Salles, the Visconde de Rio Branco and his son, the Barão; Varnhagen (Visconde de Porto Seguro), politician and historian; Joaquim Nabuco, writer, ambassador, and instigator of slavery abolition—as were also several fine men still alive, as Rodrigues Alves, the great Paulista.

Of modern Brazilians to whom the country owes a debt there are none with more claim to gratitude than Dr. Oswaldo Cruz, who banished yellow fever from coast towns once notorious for their unhealthiness, and Colonel Rondon, who has devoted his life to the opening up of the Brazilian interior, and besides mapping, charting, and creating telegraphic communication throughout the hinterlands of Matto Grosso, has brought whole tribes of wild Indians into civilized ways of living.

Among the elements which comprise and influence Brazilian social conditions, that of the Portuguese of course stands first, for as Ruy Barbosa said the other day, "Americans are descendants not of Apaches, but of Anglo-Saxons; not of Guaranis, but of Latins." The Indian admixture has left little traceable influence but that of physical hardihood. The extreme south of Brazil, as we have already seen, has had during the

last century an enormous influx of European white blood other than Portuguese, chiefly Italian and Germanic, while all the large coast cities are noticeably impregnated with more or less foreign elements. In the interior of the northern promontory a noticeable feature is the blonde average of the population, partly an inheritance from the days of Dutch control and partly from that of French settlement. Among the groups of unhappy *retirantes* from the drought districts, encountered in the streets of Pará and Manáos, waiting for shelter and work, there are often to be seen people with fair hair and blue eyes who might have come direct from Amsterdam or Brittany.

On the coastal belt of the lower half of the northern promontory there is another very strong admixture, that of the negro. Frequently the Brazilian shakes his head over this element, but occasionally the cudgels are taken up in its defence. The author Sylvio Romero says frankly that the European was not, in early colonial days, "strong enough to repel the native savage and cultivate the soil, and so resorted to that powerful auxiliary, the negro of Africa . . . the ally of the white men." He calls the negro "a robust civilizing element," and says that from the close association of slavery sprang the mixed-blood descendants, who constitute today "the mass of our population and the chief beauty of our race."

"Still today," he declares, "the most beautiful feminine types are these agile, strong, brown-skinned girls with black eyes and hair, in whose veins run, although well diluted, many drops of African blood. . . . The coast of Africa civilized Brazil, said one of our statesmen, and he spoke truth; the negro has influenced all

our intimate life and many of our customs are transmitted from him. It is sufficient to remember that the only genuine Brazilian cooking, the *cozinha bahiana*, is entirely African. Many of our dances, songs and popular music, a whole literature of ardent outpourings, have this origin. It is unfortunate that this energetic race should have suffered the brand of slavery; we should make a vow to revindicate its place in our history. There are means of utilizing the negro without degrading him."

Sylvio Romero adds that "all the first-class people of Brazil have white blood, either pure or mingled with that of another race," but that the white element should do justice to the degree to which the black has been a mental, political, economic and social factor. He traces, in a little book of which I found a stray copy on a bookstall in Manãos market, the negro element in the folklore of Brazil (*Contos Populares*, Rio de Janeiro) as well as that of the native Indian, and makes the point that both Indian and negro are "inarticulate" in Brazilian society, except through the medium of a language foreign to their ideas, Portuguese, which has undoubtedly coloured their mental expression. These Folk-tales of Sylvio Romero's collection, as well as those preserved by Couto de Magalhães in his *Selvagem*, are delightful tales, many hinging upon the adventures of various wild animals, and frequently displaying a decided streak of humour not unlike that of the "Uncle Remus" negro tales of North America.

At least one negro poet of Brazil has a claim to fame—Cruz e Souza; the sculptor Pinheiro was also chiefly of African blood; José de Patrocínio, who worked hard for the abolition of slavery and stood by the chair of

Princess Isabel when she signed the decree of freedom, was an able and eloquent negro writer. Altogether, the debt of Brazil to the strong African races appears to be quite as important, if not much more so, than that owed to the Tupi-Guarani and other "Indian" tribes of native Brazil. Fleeing from before the hard hand of the white man, the Indian as a separate social element has disappeared from those parts of Brazil brought into touch with modern life.

This native Brazilian, the "Indian" of the coasts, inland plains, and forest-bordered rivers who lived in the country before Portuguese possession, has left no traces of civilization comparable with that of the Incas or pre-Incas of the north-west of South America, or with the culture of the Maya of Central America and their pupils and conquerors, the Aztecs. Only in the north, along the Amazonian river highway connecting with Peru are there remains of ceramic art, and survivals of weaving skill, which denote marked attainments by a people with settled homes and defined social habits.

The Museo Goldi at Pará is full of good pottery, some fairly modern, and much dug from burial grounds on the great island of Marajó at the mouth of the Amazon; Marajó has a lake which in turn shelters an island which has proved a mine for the archaeologist—and none too respectfully treated, unfortunately, by some recent excavators, who seem to have been more occupied in acquiring loot than in making historical records. This island in the lake appears to have served for a burial ground of tribes with social customs of a distinct type; many of the funerary urns are large enough to contain an entire human body, and some are of good artistic design; there is a very noticeable resemblance between

certain of these Marajó pottery specimens, especially the smaller jars and domestic vessels, and ceramics found in Colombia and Southern Central America.

To the present day the Amazon Indians have preserved their skill in weaving native fibres; hammocks made of delicate threads, fine as lace and beautifully prepared, are ornamented with elaborate feather devices worked in with the fibres. They are sold on the Amazon for prices reaching several hundred milreis. Both the Museum in Pará and that in Rio de Janeiro, begun by Dom Pedro and housed in his one-time palace, contain beautiful specimens of Indian feather work, the exquisite pinks, blues and greens of Brazilian birds lending themselves to the gay effect. Allied in race, apparently, to handsome, stocky natives of British Guiana, the Amazon Indian often has a skin of a cinnamon tint, is physically strong so long as he is not called upon for regular and confined labour, is a good waterman and archer, and is not inimical while he is allowed to remain undisturbed in his forests. If it were not necessary to enlist his help or enter his retreats, his effect upon Brazilian modern social conditions would be nil; there was a time when Indian blood and labour were forcibly brought into service, but that period is past, although the effect of the former survives in the fortifying of much Portuguese blood. The hardy mixture that resulted was able to withstand a trying climate as a pure European race probably could not have done.

Farther south the Indian seems to have been of a different origin, whose cradle is assigned by some scientists to Paraguay, and who are identified with the fierce Caribs, invaders of the West Indian islands and



Igapó near the Rio Negro, Amazonas.
Caripuna Indians, on the Madeira River.

destroyers of the gentle aborigines of those shores before the Spanish came. No pottery remains are found in the south as in the north; these tribes seem to have been nomadic in tendency, cultivators of no arts that have left traces, builders of but light and temporary dwellings, living upon few foods and those obtained chiefly by hunting. The chief articles cultivated were mandioca and maize, the forests yielding wild fruits and nuts. There seems to be no doubt that the majority, if not all, of these natives were given to cannibal feasts, but in some cases the act was ceremonial and in others was confined to enemies of the tribe. Apart from these propensities the native appears to have been a gentle and even timid creature, endowed with simple good sense, and quite a man of his word. With the Portuguese settler he was almost always at loggerheads, but the French knew well how to make a valuable and faithful ally of him, loyal supplier of food and shelter in the darkest day of the French attempt at colonization both north and south; the Jesuit priests, too, who followed the Indians into the wilderness were able to make quiet converts out of them, and to train them to domesticity. Since the Jesuits' work was destroyed and the missionaries themselves expelled from the country the Indian has been practically let alone; withdrawn socially, his part in Brazilian life has been a silent one. He has been still living in the Stone Age. He never knew and has not adopted the use of metal, erected no stone or other permanent buildings of any kind, and set up no temples to his gods. Idea of a deity was to many tribes represented by Tupan, a being somewhat resembling the North American's "Great Spirit;" medicine men, called *pagés*, performed and still

perform, wonders and enchantments to cure the sick. When Prince Adalbert of Prussia went up the Amazon in 1843 he was able to see one of these wizards at work upon a sick man, and himself complained of a pain in his arm, asking the pagé to cure it; the spot was rubbed with unguents, covered with leaves, exorcisms were made, and at last the pagé blowing upon the arm freed a butterfly and declared that this was the disappearing pain; the European onlookers said that it was a marvel that the wizard had been able to go through such a performance with the butterfly concealed in his mouth: evidently these are quite good conjurers. It is not unknown for the position of pagé to be offered to a distinguished foreigner: I heard on the Amazon of a German doctor, whose cures had won the confidence of a remote tribe, receiving this curious honour.

The only man of modern times who has had continued success with the native of the interior is that great Brazilian, Colonel Candido Rondon: in his work of constructing telegraphs and roads and mapping and surveying in the vast sertões of Matto Grosso, Rondon has laboured for twenty-five years to win over the timid and hostile Indians. He has so far succeeded that not only do they now refrain from destroying his lines and stations, but have been trained to the service of the Commission which Rondon heads, guarding the posts and cultivating fields in their neighbourhood for the supply of the engineers. In 1915 a series of moving picture films were shown in Brazilian cities, made on the route of the Commission's work, and showing interesting pictures of Parecís, Nhambiquaras, and other Indian tribes friendly to the invaders of their interior regions; they are frequently fine-looking, well-

developed, sturdy people, very well worth saving among the world's races.

All over the Americas the question of the fate of the native is a painful one. In North America, both in Canada and the United States, he has diminished with extraordinary rapidity even when wars have ceased; contact with the white man seems to be fatal to him. It is only of late, since he ceased to be a physical danger, that conscience has been aroused on his behalf and efforts made to retain the survivals. Farther south the Aztec is still holding his own, a hardy race living its own life yet and able to preserve customs and wide land spaces. In Central America the only marked group of pure race is the gentle Guatemalan Maya, almost enslaved but still living the life of the sixteenth century in the uplands: when taken to work in the lowlands, he dies.

In Peru the natives are still a strong tough mountain people: Ecuador, Bolivia and Chile also have incorporated the Indian into the industrial life of the country; from the Argentine he has practically disappeared, the face of the land occupied by restless, industrial strangers, while he has no place in statistics or in calculations affecting the progress of the country. He is no more a factor than the North American Indian is a factor in the United States.

Is he to suffer a similar fate in Brazil? Not yet, for his numbers are large and he still occupies great tracts of the vast hinterlands. There is, too, a lively public sentiment on the subject of the Indian in Brazil, statesmen and writers frequently calling attention to the problem. Spaces in Brazil are so enormous that it will be many a generation before any question arises of

intrusion upon Indian retreats, and perhaps by that time an extension of the methods of Rondon will have divested him of fear of civilization.

It cannot, however, be imagined that the native of Brazil will supply the labour needed to develop great interior regions; he is not willing to work at given tasks at appointed times and to maintain such work day by day. He is probably not physically fitted for such tasks. When, seduced by agents during rubber booms, he has been bribed into working at the systematic gathering of *goma*, he has failed and died in too many instances; only when his blood is mingled with that of another race, and the *caboclo* produced, is the child of the *selvagem* able to take his place in the industrial world.

With the suggestion that the Indian should be strengthened by admixtures of introduced Asiatics, on the score that the Oriental and the native of Brazil are already akin, I have scant patience. A tilt of the eyelids seen in some Central and South American natives has been the chief basis of a number of fantastic theories generally pre-supposing the passage of large numbers of Chinese immigrants by way of the Behring Strait; difficulties are brushed away with an easy hand by enthusiasts of this idea, but to ignore them is, as T. A. Joyce says, to ignore the value of scientific evidence. It is just as reasonable to suppose that China or Japan or both were colonized from South America as to insist on the reverse movement, but as a matter of fact the division is so extreme on the very points where resemblances should exist—in language roots, social customs, arts and food, and religion—that discussion of the question appears futile. It may be

taken for granted that oriental immigration and mixing will not be accepted by Brazilians as the solution to the Indian problem; like many another Brazilian problem, it will be solved from within.

Education in Brazil for the masses of the people has been the subject of serious consideration and effort for the last fifty years. Government schools in the care of the separate States differ widely in varying latitudes, both in quantity and quality, and problems depend largely upon the origin of the population. The Italian immigrants of São Paulo are obviously not in the same class as pupils as the negroes of Bahia State or the three-quarter Indians of Amazonas, nor can States with few exports and small revenues spend a corresponding amount on education with rich and expanding regions.

São Paulo is in the matter of public schools, as in commerce, the leader State; she is a wealthy State, and she has not hesitated to spend enormous sums on all kinds of public works, whether roads, water-supply, railways, drainage—or school buildings and service. The Director of Public Instruction, Dr. João Chrisostomo, in speeches and writings shows that he has a very clear idea of the object of modern schooling, to train a healthy mind in a healthy body. Medical and dental attendance upon the children is regularly carried out in the Paulista schools, teachers are trained in an excellently equipped and managed Normal School, and buildings have been multiplied until there is today a school for every fourteen hundred of the inhabitants of São Paulo state. The task of educating the children of the working population is a more difficult one in the agricultural districts, but every good coffee fazenda has its school. São Paulo has made

special efforts to bring new immigrants into touch with Brazilian conditions by establishing a series of night schools where Portuguese is taught, together with Brazilian history and geography; the writer once visited a school of this kind and saw Italians, Syrians, Greeks and a Japanese, all adults, learning earnestly in the same room.

Not all of the Brazilian States have as much money to spare as São Paulo, but the framework, and much of the real building and equipment, of a satisfactory public school system exists in every section of the country. Feminine professional education has made a certain start, and the writer has rarely seen a more promising, and handsome, group of young women than the students of a normal school in Pará. Many Brazilian cities take pride in their professional and technical colleges, some of very old foundation, as that of the School of Law of Pernambuco, the School of Medicine of Bahia, the Polytechnic School of Rio de Janeiro, and the School of Law of São Paulo.

Religious scholastic institutions are many, several of the great Orders, such as the Benedictines, Franciscans, and of course the Jesuits, maintaining splendid, large, and wealthy colleges. Convents for girls are also of first-class importance in the Brazilian educational field, the Sacred Heart institutions taking thousands of girls, and apparently giving them a good training. In São Paulo there are several schools of Italian origin; there is a popular French Lycée in Rio; the American Mackenzie College in São Paulo, founded by Dr. Horace Lane, is a fine institution doing good work—possessing a kindergarten branch for young children as well as upper grade classes and technical courses; and there is a series



Agricultural School at Piracicaba, S. Paulo State.

Maintained by the State Government; teaches scientific agriculture, conducts chemical experiments and maintains a splendid demonstration farm. Director, Dr. Emilio Castello.

The Butantan Institute, S. Paulo City.

The *Instituto Serumtherapico do Estado de São Paulo* is maintained by the State Government. Several thousand poisonous snakes are kept here in the *Serpentario* and from them venom is extracted and injected into horses; the resulting serum is prepared as an antidote for snakebite, and is distributed all over Brazil. The Director is Dr. Vital Brasil.

of excellent and popular schools known as the *Gymnasio Anglo-Brazileiro*. The first of these was started in 1899 by an Englishman, Mr. Charles W. Armstrong, in São Paulo, for boys; subsequently a beautiful property was acquired among the woods on the lower slopes of the *Dois Irmãos* mountain just outside Rio, and a second school opened there, followed in 1913 by the foundation of a school for girls on the slopes of the *Gavea*. Sixty-two per cent of the pupils are Brazilians, who seem to take to the healthy open-air games of the Anglo-Saxon with a great deal of appreciation.

The more southerly colonies have their own schools, generally taught in their own languages; the only criticism of this retention of the immigrants' tongue and ideas that I have ever heard in Brazil made itself known at the time when rumours were freely repeated of plots in the German settlements of Rio Grande do Sul, soon after the outbreak of war in Europe, and which were strengthened by von Tannenberg's book on German expansion, which discussed the annexation of South Brazil, Uruguay and Argentina. Brazilian newspapers ran stories dealing with the possibility of German naval victories being followed by the occupation of Rio Grande and the use of the *Lagôa dos Patos* as a base for vessels, and while the defeat of Admiral von Spee off the Falkland Islands disposed of such a plan if it ever existed, the suggestion drew the attention of many formerly indifferent people to the self-centred life of some of the German colonies. It was complained that nothing but the German language was taught in the schools, that public notices and records were issued in German, and the German ideal held before the people to the exclusion of any other. The matter was very

warmly argued, the colonists scouting, and with a show of reason, any evil intention; it is hardly to be supposed that any sane person could plan the deliverance of a piece of South American territory to a foreign power, with the surrounding republics, not to speak of Brazil herself, looking quietly on. But so much feeling was expressed that the Governor of Rio Grande thought it well to announce new introductions of the Portuguese language into schools. As a matter of fact the Italians in Rio Grande out-number the inhabitants of German blood, few of whom are German born; emigration to Brazil was forbidden by the German Government in the year 1859, after some eighty thousand people had settled: the survivors with their descendants are said today to number two hundred and fifty thousand. Living as they have chiefly done, in isolated towns, it would be strange if they had acquired any habits and customs other than those of their European fathers; they speak German for the same reasons that they sleep on feather beds, brew beer, plant gardens and build comfortable houses.

The sweeping charge that South America is a land of revolutions is made so often and so lightly that few people stop to consider the record of the vastly different countries comprising the area below Panama. When the writer has remarked—outside Brazil—that Brazil has never as a whole had any blood-stained revolution, the statement has been received with looks of polite incredulity, and yet it is true. Prior to separation from Portugal a few local, factional feuds occurred, as in Pernambuco when the natives quarrelled with the petty merchant Portuguese, and in Minas when the Paulistas

fought the men of other states for claims to the gold mines, but there was no more serious internal disturbance. Independence from Portugal was achieved almost without bloodshed, by force of a proclamation: the end of the monarchy and establishment of a republic was attained peacefully.

After the republican régime began there was occasional trouble, a mere candle flicker compared to the republican bonfires in neighbour states, the insurgents of Rio Grande giving trouble for some years; there were two revolts by the navy, of a not too creditable kind. In none of these were the Brazilian people deeply concerned, nor did they affect the government of the country. No Viceroy of Brazil, no King and no President, has been assassinated in the history of the country.

External troubles, excluding the fights for twenty-four years to expel the Dutch from Pernambuco, are limited to two, with neighbours in the south; the first of these was as much the fault of Brazil as that of Argentina, and she was forced to give up the Cisplatine Province (Uruguay) forcibly annexed: but in the second, the Paraguayan war, Brazil acted only after years of aggression obliged her to take up arms. The fact is that the Brazilian is a peace lover, that Brazil has had few wars in the past and has no cause for quarrel as far as can be foreseen.

Wars between South American states have frequently hinged upon questions of boundaries, the result of vague delimitation in colonial days when much of the interior was still a sealed book. Brazil took steps early in her history as a republic to avoid such differences: that good diplomat the Barão de Rio Branco worked for years on the subject of Brazilian boundaries, and suc-

ceeded in making definite settlements with the Argentine, Bolivia and French Guiana.

Another big step for the preservation of Brazilian peace was made when in 1915 a pact was arranged between Argentina, Brazil and Chile which binds the three greatest South American states in a closer alliance than has yet been possible between North American countries. The terms include "rules for proceeding to facilitate the friendly solution of questions that were formerly excluded from arbitration" in virtue of the treaty of 1899 between Brazil and Chile, of 1902 between Chile and Argentina, and of 1905 between Argentina and Brazil. The articles of the new agreement arrange for the submission of disputes to a permanent Commission, the signatories agreeing not to commit hostile acts while the Commission's report is pending or until one year has elapsed: the constitution of the Commission is provided for, and it is agreed that any one of the three contracting parties has power to convoke it; the seat of the Commission was fixed in the neighbouring (and presumably neutral) Republic of Uruguay—at Montevideo—and after it had presented its report upon matters in dispute the contracting parties, it was agreed, would recover liberty of action "to proceed as best consults their interest in the matter under investigation."

The A. B. C. Treaty, as it is known, was signed at Buenos Aires on May 25, 1915, by representatives of the three Governments; its strength has not been tested, but there is little reason to doubt that the formal acceptance of the arbitration principle by these three powerful states in the agreement is a big step forward in American history. "Brazil has always been an

advocate of arbitration, and has accepted the flats of arbitrators even when against her interests," says J. P. Wileman, adding that the actual treaty is but a development of Brazil's historic policy, though in the particular form it has taken the formula adopted by the United States has been followed; it is also significant because it "diminishes, although it does not eliminate, chances of war between the three leading South American countries," and "leaves no excuse for the ruinous competition in armaments that has contributed so powerfully to the actual financial crises in all three countries." With burdensome purchases of fighting vessels, rifles and cannon eliminated from their budgets the Argentine, Brazil and Chile can therefore "in future devote all their energies and resources to the moral and material advancement of their peoples."

The proof of arbitration puddings is in the eating. If the contributed ingredients do not emerge from well-kept cupboards, they are apt to sour whatever the label upon the cooked product. North of Panama the five Central American Republics agreed upon the erection of the Court of Cartago some years ago where all disputes between these neighbours should be thrashed out. Approval smiled upon the project from the United States, deeply interested in the peace of Central America; Mr. Carnegie spent a large number of dollars upon the building of a beautiful palace, and the first meetings were held with mutual kindness and the applause of the world. The writer saw the Peace Palace in May, 1910. A few days previously an earthquake had visited the lovely mountain-surrounded valley of Cartago and nothing remained of a charming city but a heap of broken bricks and stone. The Peace

Palace was a dust-heap, with twisted iron girders thrusting up against the serene sky from a medley of disaster. The sight was symbolical of the spiritual fate of the Court. At the shake of an earthquake of opinions it is in ruins.

When Nicaragua signed a treaty which Costa Rica, Salvador and Honduras declare an encroachment upon their territorial rights, recourse was had to the Court, re-erected in San José. The Court found for the three appellants—and Nicaragua refuses to accept its decision.

Let us hope the A. B. C. treaty is made of better material.

CHAPTER IV

TRANSPORTATION

I. River and Road

ALL the great railway systems of Brazil are pioneers, lines of penetration, driving into new country like hopeful explorers, and starting from one of the old centres of population on the sea-border. Within the last few years links have been completed between some of the cities where the lines originate, so that there are now long strips of line running parallel to the coast, and thus Central and South Brazil are benefited by this junction so far as it exists: but for several neighbour states the only means of communication with each other is the sea.

The Brazilian, descendant of the seafaring Portuguese, is a good waterman by instinct; thousands of little sailboats navigate the sea margin of Brazil, home-built, doing an active petty traffic in raw materials and fruit and merchandise. This traffic figures in Brazilian statistics as *cabotagem*. Passengers of a humble class are carried in addition to freight and there is also a fishing fleet attached to every sea town, so that the total of Brazilian vessels of this useful little class is large.

When the first hardy Portuguese and their descendants the *mamelucos* began, very early after the acquisition of a few strips of coast by the first captains, to penetrate the interior of the Land of the True Cross

they used the rivers as highways. The settlers of São Paulo sailed their canoes on the Tieté, the "sacred river of São Paulo," and it was a facile system of exploration because this river flows inland from the heights of the mountain barrier where it takes its rise; running north-west for four hundred miles it joins the great Paraná and thence continues southward, finding its way to the sea as part of the Rio de la Plata. The water systems of the east coast of South America are so enormous and so closely linked that it is possible, with but a few miles of portage, to traverse a river path all the way from Buenos Aires in the Argentine to Pará in North Brazil, a journey of some four thousand miles.

What the Tieté was to the pioneer Paulistas, the slave-hunting indomitable *bandeirantes*, the São Francisco was to the early colonists of Bahia, no less energetic, fearless and predatory. This noble river rises in the mountains of Minas Geraes, flowing north and eventually turning east towards the sea and forming the renowned Paulo Affonso Falls. When the mineral riches of the "General Mines" were discovered this river became a busy highway of travel, the Bahianos flocking to the regions of gold and precious stones in such numbers that the coast settlement was almost deserted.

It was during this period of gold fever that two of the very few good roads in Brazil were constructed: one ran between Rio de Janeiro and the first capital of Minas, the mining town of Ouro Preto ("Black Gold"), and along it caravans travelled weekly, bringing out ore and hides and taking in slaves and merchandise. Villages which sprang up along the line of this old highway still exist although the road itself has long fallen

out of repair, and one, Juiz da Fora, has grown into an important well-built town, the centre of a mining and agricultural section now served by a railroad.

The other road which owed its construction to the exciting tales from the gold camps ran between São Paulo city and the mines; its existence was limited by the days of prosperity of the gold-seekers, and when the rich deposits of alluvial gold were exhausted and the *batea* had perforce to be exchanged for the spade, the road was abandoned. The ill luck which attended the pitched battles of the Paulistas with other claimants to the General Mines caused the withdrawal of many fortune seekers back to the plantations of S. Paulo and hastened the decay of the highway.

Another of the few much-travelled roads of the colonial or indeed any period of Brazilian history, until the opening of the flat lands of the extreme south by imported European colonists, was one built by the Jesuits from the coastal colony of São Vicente to their own mission settlement at São Paulo; this highway negotiated the mangrove swamps of the flat belt edging the sea and then climbed the rocky barrier of the Serra do Mar to the cool interior plateau. Before the construction of this *Caminho do Padre José* the ascent must have taxed even the stout spirits of those indomitable priests. The good Padre Vasconcellos wrote, three hundred years ago, of the journey:—

“The greater part of the way one cannot really travel, but must make one’s way with hands and feet, clinging to the roots of trees, and this amongst such crags and precipices that I confess I trembled whenever I looked downwards. The depth of the valleys is tremendous and the number of mountains rising one

above another appear to leave no hope of reaching the climax. . . . It is true that the labour of the ascent has its compensations now and again, for when I rested upon one of the rocks and looked below it seemed as if I were gazing from the heaven of the moon and that the whole round universe lay spread beneath my feet."

When Fletcher (*Brazil and the Brazilians*) visited São Paulo in 1855, he made the trip from Santos on horseback over a Serra road, remarking on the excellence of the section on the flat to Cubitão; he was two days on the journey and says that the road "which traverses this range of mountains is probably the finest in Brazil, with the exception of the Imperial highway to Petropolis."

This was not the first road constructed to bridge the barrier range, for in 1790 the Portuguese Governor superseded the Jesuit highway by a new one which included four miles of solid pavement and had more than one hundred and eighty angles before it reached the plateau. It was still too steep for wheeled traffic and the troops of mules which traversed it in thousands, bringing coffee from the interior after this product became a commercial factor and before the railway was built, often slid down the steep slopes on their haunches. It is said that both this and the first road were lined with the bones of mules that died by the way.

Similar stories are told of the Imperial road, built by that genuinely progressive ruler, Dom Pedro *segundo*, from Rio de Janeiro to his pet colony and residence Petropolis, a lovely nook in the heart of the Serra behind Guanabara Bay. This road, too, traversed flat, marshy ground before it began to climb the terrible Serra, and the latter section remained in use for some

years after a railroad was constructed over the flats to the foot of the mountains: engineering difficulties were considered too great for a railroad until eventually Swiss engineers applied the same methods as had solved the problem in their own mountain country.

Many people in Brazil talk of the old coaching days in Petropolis, when stout mules toiled up the sharp gradients with their loads of passengers and freight. The team was changed in Petropolis and the route pursued on into Minas Geraes. This road is still in good condition—Petropolis the flower-decked and spotless is a centre of fine valley roads leading in seven different directions—and is a panorama of charming scenes. Like its sister mountain road in São Paulo and the “Graciosa” road from Curityba in Paraná, it has entered upon a new lease of life with the coming of the automobile.

Will the entry of the cheap automobile develop road-making in Brazil as it has assisted in that good work in the United States? It is possible. Before the War, the chief importation of motor-cars was from Europe, the class was high grade, beautiful and extremely powerful. It is said that no city in the world can show more expensive high-power cars than Rio de Janeiro, where every hired machine is called upon to climb the steep grades of Tijuca or some neighbouring mountain. There are large numbers of such cars also to be seen in wealthy S. Paulo, but they do not go far from the Avenida Paulista for lack of good roads; the luxurious European car does its chief duty within city bounds.

But with the introduction of the inexpensive car of North American build, the *fazendeiro* is acquiring a

car for country use. It seems certain that what may be called the agricultural use of such cars will help to bring about improvement in interior highways that was not necessarily called for when a trusty horse or mule could negotiate any kind of a boggy track. At the same time it is not to be expected that Brazil will soon be extensively traversed by great high roads such as France possesses or such as the Romans left in Britain. The climate of half the country opposes itself to road permanence with all the force of the tropics. Burned and disintegrated by fierce sun, deluged and beaten by even fiercer rains, choked by the lush growth of a soil so fertile that a tangled green maze springs up almost overnight in any cleared space, a road has poor chance of surviving in many parts of Brazil unless unceasing labour and unending money is spent upon it. In the very regions where roads are most wanted on account of lack of other transportation means, there is usually the least chance of money being raised for their upkeep. In thinking of possible Brazilian highways, it is necessary to eliminate from present consideration much of the great teeming forestal belt of the north, and the precipitous Serra regions of the south sea-border; the areas where automobile roads could be built with a chance of permanence without exhausting expenses in upkeep are the flat lands of the north, where some excellent plans and beginnings have been made in Bahia and Pernambuco; part of Minas, where the Triangulo already has a public automobile highway service, connecting Uberabinha with the railway; the wide uplands of S. Paulo, Paran , Santa Catharina and Rio Grande do Sul; and the interior plateau of Goyaz and Matto Grosso.

The proof that permanent, and not too costly roads, can be made in Brazil lies in the fact that they have been made: the Russian carters of Paran  take their teams over rough but serviceable trails on prairie lands, and across the high sert o of Matto Grosso that great and gallant explorer, Rondon, has built roads over which services of automobile trucks are maintained for the convenience of the telegraph building, geological and charting work of the Commission. The tale of the magnificent work in the interior done by the Rondon Commission is an epic of the Brazilian interior, and one of its great merits has been the proof that this unknown country is no terrible jungle, but an open, honest country awaiting the plough.

II. Rail

Initiative in railway construction in Brazil is credited to a clever priest who acted as Regent during part of the minority of Pedro II. In October, 1835, Padre Feij  presented a bill to the Legislative Assembly in Rio de Janeiro advocating the creation of a railway system; amongst other suggestions his scheme included a limitation of rates for freight and passengers—the former to a maximum of twenty reis for each arroba carried a league, and ninety reis for each passenger carried a like distance. Nothing was done for seventeen years, and then in June, 1852, the Brazilian Government sanctioned a concession for a railroad to link the port of Pernambuco to a point upon the river S. Francisco, above the falls which blocked the way of boats traversing the busy interior river highway. This road was never built. In 1853, another concession was

granted for a line to reach the river from the more southerly port of Bahia: this plan was carried out and the road opened to traffic (Bahia to Joazeiro) in the year 1860, but before that day three other railways had been built and brought into operation.

The first of all railways to operate in Brazil was the Emperor's road running from the outskirts of Rio city across level ground to the foot of the Serra: it was opened in 1854. This, and the subsequent mountain-climbing section extending from the *Raiz da Serra* to the *Alto da Serra*, are part of the important system of lines owned and operated by one of the big English companies, the Leopoldina: I refer in detail to this series and its development work on another page. A short strip, now part of the (English) Great Western of Brazil Railway, running on level country from the city of Pernambuco was opened in 1857, and a line from Rio de Janeiro to Queimados, a distance of sixty kilometers, was opened to traffic by Dom Pedro in the year 1858: it forms part of the valuable series of penetrating lines owned and operated by the Federal Government today.

Before 1870 the most important producing states, the seaboard territories with surplus sugar, coffee, tobacco, cacao and cotton had been furnished with strips of line penetrating limited areas of the interior. In the north engineering problems were easier, for the frowning wall of the Serra do Mar melts away in South Bahia, but it was in the temperate zones of the more southerly regions that transportation was urgently demanded to serve the needs of the rapidly expanding coffee regions; São Paulo was feverishly planting all over her best red-lands, and the only outlet for the

crop was the steep mountain road to Santos. An English company took up the work of building a railroad, completed it after surmounting a series of difficulties and opened it to traffic in 1867. It is a triumph of engineering, and has never had a competitor; from S. Paulo city itself a fan of railway lines branches out in every direction except seawards, and while other great centres of rail networks in Brazil originate at the sea edge, here in S. Paulo the point of departure is from the plateau above the hill barrier. The São Paulo-to Santos line is world-famous: it is the channel through which the bulk of the coffee of the whole world is carried, and is for its length one of the notable money earners of the railroad world. The road crosses the coastal swamps following the old Jesuit road as far as Cubatão, and thence climbs the granite wall of the Serra on one of the steepest grades known in railway construction, rising two thousand five hundred feet within a distance of ten kilometers. It is a joy to ride over this line, with its magnificent equipment, minute neatness, drainage system of the mountain sides involving a remarkable series of cemented channels—the very rocks beside the track are tarred to preserve them from decay, and the sides of the hills are built up with elaborate care unparalleled in railway work; the company's power-houses, cottages for employees, and stations along the route, with the fine terminal in Santos and the beautiful "Estação da Luz" in S. Paulo, are models. Once upon a time, it is said, an American railroad man was shown over this line and asked if he could suggest any improvements. "Not unless the ends of the ties could be carved or the rails set with diamonds," replied the visitor.

Upkeep of the line is costly, soil and climate working against durability of any human effort; the climb up the steep Serra, electrically operated by rope haulage on the "endless rope" system, requires incessant watchfulness, as does the condition of the several tunnels blasted through the heart of the mountains. There is no better way to appreciate both the engineering problems and the superb beauty of the green Serra with its abrupt peaks and deep valleys than to ride on the brake of a train making the descent to Santos.

The distance between Santos and S. Paulo is about seventy-nine kilometers, but the company owns branches, and there is a duplication of the track, the result of reconstruction and the choice of a new route for the Serra ascent in 1901, which brings the total length of line owned to one hundred and fifty-three kilometers; the old track may be seen below the new one on the hillside, and is being electrified with a view to renewed activity as a freight carrier. The enormous volume of Paulista coffee seeking an outlet by the line—17 million bags in 1915-16—is a strain upon capacity in the busy season; the exports of S. Paulo are also developing in a new direction with the entry of Brazil into world markets with chilled beef, and refrigerator cars are monthly increasing in traffic over the road.

The capital of the company, whose headquarters are in London, is six million pounds sterling, and up to the year of war in Europe a dividend of fourteen per cent was regularly paid: in 1914 twelve per cent was paid, and in 1915 there was another drop to ten per cent, chiefly consequent upon the fall in Brazilian currency which caused heavy losses when earnings counted in milreis were turned into sterling for remittance to



The São Paulo Railway.

Operates between São Paulo City and the port of Santos, and is the great coffee-carrying line. Above, Estação da Luz, S. Paulo City. Below, part of track traversing the steep Serra do Mar, showing tunnels blasted through granite.

Europe. Lowered exchange has caused serious embarrassment to most companies operating in Latin America with foreign capital, especially the transportation companies whose rates are fixed, and it was loss on this account rather than reduced business which brought gloom into railway and street-car circles in 1915.

There are three railways which climb the mountain wall of South Brazil: the first was the São Paulo line, and the second the Petropolis link, built on the rack system; some wonderful views are passed on the two-hour journey. The third mountain climbing line connects the port of Paranaguá to Curityba, in the State of Paraná, some three hundred miles south of Santos. The construction of this line was as remarkable a feat as that of the São Paulo railway, and is even more spectacular; it was only completed after the first daring attempt had failed, and today the line hangs breathlessly on the sides of mountain precipices, traverses canyons on apparently frail bridges, and plunges into tunnels blasted through granite. The Serra is extremely steep in the region traversed by the railroad and the scenery is quite the most wild and beautiful of the Brazilian mountain barrier. The line is the outlet for the products of the mills of industrious Curityba, and from here the *herva matte* of the interior woods of Paraná is sent to Paranagua and thence by boat to its chief destination, Argentina. Paraná and the neighbouring forests comprise almost the sole source of supply of *matte* leaves, and thus the mountain line has a practical monopoly in the transportation of this wild product; if recent Argentine plans for planting the shrub are successful a heavy blow would probably be dealt to this industry.

Brazil built her first railway three years before the Argentine brought her first line into operation—a modest strip of thirteen miles running west from Buenos Aires—although British Guiana has the credit of possessing the earliest railroad of South America; during the Empire construction proceeded steadily but with a certain caution, and it was not until after the formation of the Republic in 1889 that floods of concessions for railway construction invaded Brazil. The years 1890–91 show the highwater mark of such plans, and while many of these dried up without leaving a trace there remained sufficient impetus for much genuine and useful construction.

Lines began to go farther afield, to form networks and connected links; they were part of general improvement plans which presently included harbours and wharves, waterworks and sanitation schemes, city paving and draining and beautifying. It is true that from the time of the Republic is dated Brazil's plunge into debt upon a great scale, but since the new American countries could not wait until they had sufficient money in the national pockets to pay for railway, harbour and sanitation, and Europe stood ready to lend her surplus gold in aid of the work, Brazil is scarcely to blame for borrowing as did her sisters, north and south. Her very extravagance helped to advertise and advance Brazil, the royal-spending world-customer with rich products for sale to justify her; she attracted immigrants, merchants, capitalists, technical men and scholars as she never would have done without her renown as a land of careless magnificence.

Borrowing and building went on without any serious check until 1912, when the first Balkan War cast long

shadows into the financial world; less than two hundred miles of new railway line have come into operation since that year in Brazil. But the previous fat years, many more than seven, had by that time not only brought about rail access to many fertile interior belts, but also the linking of the more important systems by lines reaching up and down the coast. The brilliant French author, Pierre Denis, was able to say ten or twelve years ago that there was "no general railway system in Brazil; there are small independent systems, covering with their meshes the regions of long-established colonization, but without inter-communicating lines." He found connection between two groups only, remarking that "the line from S. Paulo to Rio is today the only means of transit between two groups of states, excepting the ocean highway."

At the end of 1922 the situation is greatly changed. Not only have many states been linked up but three sister Republics are in direct communication with Brazil by rail. São Paulo city communicates by systems under allied control with Uruguay; Argentina is in touch at the western edge of Rio Grande do Sul, where the town of Uruguayana stands on the river boundary between the two countries opposite to the Argentine port of Libres; Bolivia is reached at the frontier town of Corumbá, on the border of south-western Matto Grosso, as well as at the Madeira-Mamoré Falls in the north. Linking up with south-eastern Bolivia is the result of the penetration of south Matto Grosso by the North-Western of Brazil Railway; this line, which has direct communication with the city of S. Paulo, reached Itapura on the river Paraná a few years ago, and pushed on energetically from that western edge of S. Paulo

State across the narrow southerly neck of the huge neighbour, arriving early in 1916 at Porto Esperanza on the river Paraguay, only a few miles from the objective of the road, Corumbá town on the frontier of Bolivia. This transportation service gives Bolivia an outlet of which the interior republic has stood in need since she was deprived of a seaport of her own on the Pacific; perforce sending her products out through other republics, Bolivia has been already aided in the north with the opening of the Madeira-Mamoré line, giving better access to the river highway of the Amazon.

The North-Western line has pushed farther afield from the seacoast than any other in Brazil: the constructing company is Belgian, with headquarters in Brussels, and the Federal Government in this as in many other instances guarantees interest on the capital expended, a loan having been raised for this purpose in Paris in 1909. An able Brazilian engineer, Dr. Firma Dutra, directs the work; all the rolling stock, including dormitories and restaurant cars, has been built in Brazilian workshops with Brazilian hardwoods. Another approach, parallel to and south of the north-western, to the great stock-raising lands of Matto Grosso is offered now that the extension of the Sorocabana line from Salto Grande to the port of Tibiriça on the Paraná river is completed; Tibiriça is a famous cattle crossing where thousands of head of the stocky beasts reared on luscious interior pastures are brought into the State of S. Paulo. Their numbers have been greatly augmented since the opening of two packing-houses in S. Paulo at the end of 1914, and excellent service has been rendered by the Paulista enterprise, the Companhia de Viação São Paulo-Matto Grosso,

which owns the port of Tibiriça, operates ferries, runs a steamboat service up the Paran  river to Jupi  (Itapura) where the North-Western brings merchandise from S. Paulo city, as well as service on three or four tributaries of the Paran ; the company has constructed a highway, now bordered with coffee plantations, rest-pastures for the passing cattle, and embryo villages along the route, all the way to the city of S. Paulo.

There are three chief fans of radiating railroad lines in Brazil, starting from the coastal border from S o Paulo, Rio de Janeiro and Pernambuco. The first two form networks of lines of much greater extent than the third, and besides these systems there are several points along the littoral where a railway penetrating inland is already the handle of a new fan. The southernmost state of Brazil, Rio Grande do Sul, is well served, lines running through the middle of her territory from north to south (the Auxiliaire, now part of the Brazil Railways group) and east to west, so that the state is in touch with Argentina, with Uruguay, with the States of S. Paulo, and Santa Catharina and with the seat at each end of the Lag a dos Patos, a busy lagoon with the town of Rio Grande at the entrance and Porto Alegre at the northern end: the railroad splits into two at Cacequ  in order to serve both the rival ports. Superior docking at Porto Alegre sent practically all visiting vessels to the upper end of the lagoon until the end of 1915, when the new harbour of Rio Grande was formally opened. The work, a long and expensive series of tasks, was performed by a French company, and includes the deepening and maintenance of the channel to permit the entry of deep-draught vessels, docks and wharves; Rio Grande

is a fine state with a cool climate, an industrious population, and thriving business. It has been carefully colonized with white European settlers, has space for a million more, and with its easy access to other centres of population by sea and rail has much to attract newcomers. Increasing exchange is carried on with the Argentine, chiefly by water.

Santa Catharina's rail service consists of the north-and-south link of the São Paulo-Rio Grande line, a short local line between the colonies of Blumenau and Hansa, and two short strips running inland from the sea, one from Imbatuba to Laguna and thence inland to Lauro Muller, serving the coalfields of that region; the other from the excellent little island port of São Francisco, across to the mainland at Paraty, and thence inland to Joinville, Rio Negro and Tres Barras, where the lumber yards of a company controlled by the Brazil Railway Company feed it with freight. The Tres Barras yards operate with the Paraná pine for which the southern States of Brazil are famous, ship it to many other parts of the Brazilian Union, and in 1915 arranged to supply Argentina alone with forty million feet a year.

S. Francisco port has entered upon a new life since the lumber business has been flourishing; a double row of settlements has sprung up beside the track of the railroad and agriculture is showing development in a region that has been steadily if slowly settled by the descendants of the early colony of Joinville.

The State of Paraná is better off for connections; in addition to the north and south link with the sister states of São Paulo and Santa Catharina, she has a railroad running off from it at the station of Ponta

Grossa due east to Serrinha (whence a branch connects with Rio Negro directly to the south), on to the pleasant capital town, Curityba, and down the wonderful mountain road already referred to until the port of Paranaguá is reached, one of the lively younger shipping points of the southern littoral.

São Paulo, the next state northwards, is the possessor of the best system of penetrating railroads in Brazil: she has more mileage than any other single state in the Union, counting over four thousand miles. In his Message read before the S. Paulo Congress on July 14, 1916, the President of the State, Dr. Altino Arantes, remarked:

“During the past year we had an addition of one hundred and forty-two kilometers to the railroad mileage of the State, bringing the figures of the total system to six thousand two hundred and seventy-nine kilometers on December 31. Of this total four thousand three hundred and fifty-five kilometers belong to private enterprises; one thousand five hundred and sixty-nine to the State and the remaining three hundred and fifty-five to the Union.”

The most important of the lines belonging to the State referred to by Dr. Altino Arantes is the Sorocabana, with over eleven hundred kilometers of track, which is leased to the Brazil Railways: the other two state properties are the Funilense Railway and the Cantareira Tramway, running from S. Paulo city up a green, well-settled valley to picturesque water-works among woods.

The Sorocabana with its general westerly direction is one of the lines which are pushing ahead towards the Matto Grosso boundary; building on from Salto

Grande on the Paranpanema river, the line reached Caramar in 1916. As we saw when on the subject of the line from Santos to S. Paulo, railroads in the State of So Paulo only began forming a network at the top of the plateau after the Serra had been conquered¹; the next to be constructed was the Paulista, which has its northern terminal at Barretos, in the heart of good cattle lands: a flourishing packing house owned by the Companhia Frigorifica e Pastoril of S. Paulo is situated near Barretos, and has as its president the same energetic Paulista who heads the railway, Conselheiro Antonio da Silva Prado. Both packing house and railway are purely Brazilian enterprises financed with Brazilian money, but the construction of the road was headed by an American named Hammond, and was in consequence known for a long time as "Hammond's road" to distinguish it from "Fox's road" as the pioneer line to Santos was called after the English engineer. The Paulista both served and created coffee plantations, following the lines of richest deposit of the red diabasic soils that have made S. Paulo the great coffee country of the world; the same may be said of the Mogyana, almost parallel to the Paulista but farther north, also a Brazilian owned and operated company, and the Northwestern.

Today these paralleled lines are linked with branches and possess steel arms reaching out into rich developing districts so that there is a genuine "rede ferrovirio"

¹ There is another railroad running off from Santos. It does not attempt the Serra, but follows the flat coast to Itanhaen port, and then turns a few miles inland, passing Prainha, until junction is effected with the Iguape river. Boats sail down from this point to Iguape port, notable as the scene of settlement of Japanese rice growers a few years ago.

over Paulista territory. The great coffee centre of Campinas is the point of departure for a star of lines, and so is the more northerly Ribeirão Preto, in the heart of the dark blood-red lands.

In a particularly fortunate position with regard to communication with other States as well as interior service, S. Paulo is linked directly to Rio by the line owned and operated by the Federal Government, the Central system, and onward from Rio due north to the port of Espirito Santo State; to the interior of Minas Geraes by way of Uberaba, Araguary and over the border into Goyaz to Catalão and Roncador; by following the Central's lines the capital of Minas, the new town of Bello Horizonte, is reached; southward, the series of lines controlled by the Brazil Railways take the traveller from S. Paulo all through the States of Paraná, Santa Catharina and Rio Grande to the Republic of Uruguay, with connection at the border town of Santa Anna do Livramento with a line running south to Montevideo.

The writer followed this route in December, 1915. The journey took six days and nights, three of the latter being spent in the train and three at points en route while waiting for connections, certain trains running but twice a week. My path was smooth by official courtesy and the trip was pleasant as well as interesting; the sparsely occupied country, with colonies set down here and there near the track, has a delightful freshness born of bright empty spaces, woods and a multitude of shallow rapid streams.

The pine forests of Paraná and Santa Catharina with their flowery carpets were a series of fine pictures, while the wide-spread sunny pastures of southern Rio Grande, a perfect cattle country with a cool climate, are waiting

for more white immigrants. Herds stray on the sides of gentle grassy slopes and in the valleys where a cluster of green marks the bed of a little river, fields are marked out and a red-tiled house nestles—but these are all too few.

The Brazil Railway Company was formed in 1906 through the initiative of Percival Farquhar with the object of unifying railway lines in South Brazil, then in several different hands as a result of the concessionary system which was the only way of inviting foreign capital in earlier days: the project also included the control of accessory ports and large industrial development along the line of the roads. About the same time the syndicate formed by Farquhar obtained interests in railways in Argentina, Paraguay, Uruguay and Chile; a huge unification plan was foreshadowed.

Some of these plans have fallen through—the narrow-gauge Argentine lines leased have, for instance, returned to their former control, and Chilean interests have been dropped—partly because disturbed conditions in Europe since the first Balkan war in 1912 ended opportunities for obtaining more metal props.

Registered in the United States, the Brazil Railway Company is really a monument to French confidence in Brazil, in that the capital employed, as well as the properties acquired, is Gallic in origin to a large extent. The capital of the company is fifteen hundred million francs, and of this huge sum nine hundred million francs were subscribed in Paris, the rest of the money coming from Brussels and London. The company is interested in thirty-eight subsidiary companies, including several railroads which were bought or leased (and, in the case of the Madeira-Mamoré, constructed), a frigorífico

recently completed on Rio docks, a flourishing cattle company, a land and colonization company, lumber business, interest in ports, as at Pará, Rio Grande City and Rio de Janeiro (leased out to another company), a steamship service on the Amazon river, et cetera. Land owned by the cattle company totals to over eight million acres, in the States of Matto Grosso, S. Paulo, Paraná and Rio Grande do Sul, and serious efforts are being made to improve the stock of the two or three hundred thousand head of cattle kept in various regions by the introduction of first-class breeding stock. Animals are sold to the second of S. Paulo's packing houses, the frigorifico at Osasco, just outside S. Paulo city, an American owned and operated enterprise¹ dating also from 1914, which has friendly connection with the Brazil Railways.

A few of the interests of the Brazil Railways are in a prosperous state, as the lumber and cattle businesses, but the position of the company as a whole suffers from the weaker elements of the group, perhaps particularly the Amazonian, which were injected into the earlier South Brazilian plans; many of the development companies not only do not pay but need money to carry them along. The affairs of the company are now in the hands of an American receiver, and the latest report presented to long-suffering shareholders at a London meeting was optimistic in tone. It is the most ambitious group of enterprises under one control in Brazil, and perhaps this is one reason why its plan of line, land and port management has not been always looked upon with a favourable eye by Brazilian authori-

¹ The Continental Products Company: capital and personnel came from the Sulzberger house in Chicago.

ties. Objection seems also to be made to the introduction of foreign capital not for the purpose of development work of a new kind, but when employed in acquiring properties already existing.¹

In South Brazil the company operates over three thousand miles of line, including the State-owned Sorocabana, the São Paulo-Rio Grande, the Paraná line, the Auxiliaire traversing Rio Grande do Sul, and the little Thereza Christina in Santa Catharina.

São Paulo and Rio de Janeiro are linked by the line owned by the Federal Government, the Central do Brasil, a series running off from a point on the S. Paulo line into the State of Minas Geraes; the writer followed this road when visiting Bello Horizonte, the new capital of Minas, a beautifully placed city with mountains rising behind it and terraced plains and valleys sweeping away in front. The line into Minas traverses a hilly country, green, fertile, well-watered with turbulent rivers whose valleys are sedulously followed. From near Bello Horizonte a long arm of steel reaches out past Sete Lagoas, Curvello and Curralinho, where a branch runs to the famous diamond fields of Diamantina, and to Pirapora on the river São Francisco: from this point steamboats meeting the trains take their goods and passengers down the waterway to Joazeiro in

¹ Message of Dr. Altino Arantes to the S. Paulo Legislature, July 14, 1916:

"Foreign capital flowed here in search of convenient employment, but, instead of being destined to new enterprises in the development of the great latent wealth of our State, it was localized in railways already prosperous, whose income and control are by way of being totally alienated, with grave prejudice and serious threats to the future of our State. . . .

"It would be, in truth, blamable want of foresight to allow what is our own to pass to strange hands, when we created it at the cost of our best efforts, constituting thus the most worthy exemplification of our industry and our energy."

Bahia State. It is from this river port of Pirapora that an extremely bold railway has been planned, to run almost due north to the city of Pará, the latter part of the route following the valley of the Tocantins river: the line would be some two thousand miles in length, traversing country never properly explored or charted. Authorization to contract for the work was given in 1911 to the brilliant Brazilian engineer, Frontin, to whose genius the beautifying of Rio de Janeiro is due, and a beginning was made between Pirapora and Formosa, but the universal lack of money has given a check to operations. The headquarters and main station of the *Estrada de Ferro Central do Brasil* are situated in Rio de Janeiro. Three trains are run daily each way between Rio and São Paulo, those starting in the early morning landing passengers about six in the evening; they are equipped with a satisfactory and inexpensive restaurant service. The two night trains leave each city at intervals of an hour and a half every evening; the first leaves about seven o'clock, and is modestly furnished with beds on the North American Pullman plan, while the famous "luxo," on which newspaper reporters always attend to take down the names of the illustrious, starts at nine o'clock; each camarote is a separate apartment with an individual toilette, fans, electric light, bells, and very prompt attendants always at hand, in the style of the best European trains. Leaving Rio the track runs through a pretty green valley, intersected with palm decked little ravines and numbers of round hills, until the uplands of São Paulo are approached. The line has never paid its way under Government control, although deficits have been recently much reduced by stern elimination of free passes

for politicians and their friends. Expenses of operation were in 1915-16 abnormally inflated by the cost of coal which at one time reached one hundred and twelve milreis a ton (over twenty-eight dollars) and alterations were made in many of the locomotives to permit the use of oil as fuel. Coal used in Brazil is practically all imported, development of national southerly fields not being yet sufficient for a tithe of the needs, and while Welsh hard coal soared high when the British Government checked exports, North American was offered at prices little inferior on account of the making-hay methods of United States ship-owners. Oil, too, is imported, but the Federal Government procured a large stock before changing the fuel methods of the Central, and is able to buy supplies from three different firms. Several railroads of Brazil, in these days of stress, burn wood.

From Rio de Janeiro city is an exceedingly important "rede" of lines, for in addition to the excellent system of the Central is the series belonging to the Leopoldina company, an admirable constructor, operator and developer company. The Leopoldina owns about one thousand eight hundred and fifty miles of track, serves an area of two hundred thousand square miles, and penetrates the three States of Rio de Janeiro, Minas Geraes and Espirito Santo, linking the port of Victoria to Rio by a lateral line with little branches joining up small ports by the way, and passing through the rich sugar country of Campos and the active town of Itapemirim (Cachoeiras) where several industries obtain power from the falls; other lines run off from Itapemirim, Campos, Macahé and several points penetrating fertile interior country with good transportation

service. This coastwise series, and another running to Nova Friburgo and on in a general northerly direction, start from Nictheroy, across the bay from Rio city: the bay is traversed by a thoroughly up to date system of ferries, of the Cantareira Company, which originally belonged to a Brazilian firm but was purchased and is now operated by the Leopoldina.

The fine line to Petropolis starts from the Praia Formosa in Rio, the ascent taking two hours, apparently never grudged by the scores of business men whose homes are in the mountain city during the summer and who travel daily to Rio; from Petropolis it runs on into the Minas interior, serving a coffee and dairy country.

The Leopoldina Railway Company was formed in London in 1897, and with the capital subscribed existing lines were acquired which have since been improved and largely extended; the series was bankrupt when taken over but with unification of the lines and the encouragement of agriculture along the course there has been a respectable dividend-earning for the last ten years. The company maintains demonstration farms at Nova Friburgo and Bem Fica in the interior of Rio State, where irrigation is applied to the rich little valleys that intersect a multitude of hills; on the hilltops coffee has been grown for half a century, and while this process has been one of gradual but certain exhaustion the valleys have been neglected. It is interesting to see, all along the Leopoldina's lines, efforts made by the Brazilian small farmer to imitate the methods of Bem Fica. Another demonstration farm at the station of Campos, on the way to Victoria, was changed in a few months from a piece of waste land to a lusty field of cotton as an example; all this coastal belt is an old sugar country

which should also be a great producer of cotton and fibres and fruit. Running on to the capital and port of the State of Espirito Santo, Victoria, the line serves at the latter end a hilly coffee country with one of the most wonderful winding panoramas of scenery in South America; a dormitory and restaurant service of high-class type operates between Rio and Victoria, and from this exquisitely framed little port, "*O Rio em miniatura*," go out four million bags of Brazil's coffee crop. The city lies at the end of a bay entrance of great beauty, green, broken by fantastic hills reflected in pellucid water; port works of the best modern design have been begun by the Leopoldina engineers, but when the writer visited the port in late 1915 work had practically ceased as a result of financial stringency. The hopes of Victoria to become one of the busiest centres of activity are high, for in addition to her coffee export trade she may serve as a great doorway for outgoing minerals from Minas Geraes: enormous iron deposits for which Victoria is probably the most logical outlet have been acquired by a British company and with the war over, are awaiting loosened purse-strings, for development.

In addition to the coastwise link with Rio, the State of Espirito Santo is traversed in a north-westerly direction by a line which enters the valley of the Rio Doce and passes on into Minas Geraes; about four hundred and fifty kilometers are in traffic of this system, which, linking up with other lines in the south of Minas, will serve a fine region and add to the prestige of Victoria.

Looking up the coast from Victoria there is observable a gap between that pretty port and the cacao centre,

Bahia, as regards railroad connections parallel to the sea coast. The greatest networks of lines have ceased in Espirito Santo, and above this region there is only one linking series of lines, the system of the Great Western of Brazil, serving the whole of the great north-east promontory of Brazil. The lines of Bahia do not form a coherent system, important as they are as regards local needs.

Below the port of Bahia (properly the city of São Salvador, but as little popularly known by that name as Rio is recognized by her official title of São Sebastião) there are two lines penetrating from coast towns inwards to cacao-producing country: the most ambitious runs from Ponta da Areia, close to the port of Caravellas, westwards across the narrow southern neck of Bahia State, into Minas Geraes to the town of Theophilo Ottoni, a distance of three hundred and seventy-six kilometers. The second penetrating line runs from the port of Ilhéos to Conquista, a distance of eighty-two kilometers. During the war and post-war booms this was a notable freight carrier and profit maker, for the cacao plantations tributary to the line have yielded unprecedentedly large crops at a time when every ounce of cocoa in the world has been called for at high prices. The isolated little Ilhéos rolled in unexpected money in 1915-16, and prospered again in 1919.

Bahia's great port farther northward stands on a peninsula at the north of a large, deeply indented, island-studded bay. There is no river delta here to assist transportation problems, and connection between the lines originating at different parts of the bay is rendered difficult by the depth of sea inlets and the marshy character of the intervening land. It is for

these reasons that a line runs south from Nazareth, itself south of the bay, west from São Felix, northwesterly from Cachoeira, with the most important line of all running from Bahia city across country until junction with the legendary river S. Francisco is effected at Joazeiro: this latter line branches off at Alagoinhas ("Little Lakes") to Aracajú, the port of the little-known State of Sergipe, and forms the only linking railroad of the series serving Bahia. The cacao crop of the State is all marketed in and shipped from Bahia city: it reaches that distributing point from the producing centres of the more southerly lands by sea, a state-owned service of small steamboats, the "Navegação Bahiana," helping in this transportation work, besides operating on the S. Francisco river and running to and from certain productive islands off the Bahia coast. In 1915 Bahia exported 41,546 tons of cacao with an official value of 37,000 contos of reis, or about nine and a quarter million dollars, yielding in taxes to the State 6,388 contos, in addition to large sums contributed by the tobacco and coffee export. As far as rail connection is concerned Bahia is practically out of touch with active regions of Brazil, but since her one city of first-class importance is situated on the sea margin, and she is very well served both by *cabotagem* and by ocean-going vessels, national and foreign, no complaint is heard in Bahia concerning the deficiency. The line from S. Felix, a town reached by boat across the bay from Bahia which has achieved fame for cigar manufacture, penetrates richly producing tobacco country: Nazareth is the headquarters of a district exporting manganese ores.

Proceeding northward past the mouth of the São



Rua Barão da Victoria, Pernambuco.
Inauguration of Avenida 7 de Setembro, Upper Town, Bahia.

Francisco river no railway is encountered between Aracajú and the coconut-embowered port of Maceió (Jaraguá), capital of the State of Alagôas: construction of such a link would involve engineering difficulties in crossing the wide river delta and, north of it, negotiating the chain of picturesque lagoons ("lagôas") which give the State its name. Alagôas, wedged under the shoulder of Pernambuco, is a fine sugar country: the lower, business section of Maceió literally runs and drips with sugar; the warehouses along the waterfront are piled with bags from which cane juice leaks, and the heady smell of it permeates the streets. From this busy, hot little city the most southerly arm of the Great Western's series of linked lines reaches, a branch penetrating sugar lands by way of Atalaia and Viçosa, while a more northerly track connects with Garanhuns, runs thence north-east, and, with a sea-ward branch to Barreiros, connects with the fan-handle of the system at Recife (Pernambuco).

The Great Western of Brazil Railway was formed in London in 1872; the first work done was the construction of one hundred and eighteen kilometers from the port of Recife to the town of Timbauba with an extension to Limoeiro; in 1901 connection was carried on to the Conde d'Eu line in Parahyba, and in the same year the company leased seven other disconnected lines of the north-east promontory, with the object since attained of forming a linked system. Of the seven thus controlled three had been built by, and still belong to, the Government, while four were English built.¹ As operated today

¹ Government: South of Pernambuco, Pernambuco Central, Paulo Affonso.

English: Conde d'Eu, Recife and São Francisco, Central Alagôas, Natal and Nova Cruz. The Conde d'Eu dated from 1857.

the Great Western line includes more than eleven hundred miles of track, links and penetrates the four States of Alagoas, Pernambuco, Parahyba and Rio Grande do Norte, and serves the ports of Maceió, Recife, Parahyba, Cabedello and Natal, an independent line extending north of this point to the town of Pedra Preta. The system has done excellent work in developing sugar, tobacco and cotton country, but it has suffered from the financial difficulties of the last three years, droughts reducing the agricultural product of northerly regions and adding to troubles consequent upon fallen exchange: the company has asked the Federal Government for relief from the onerous financial obligations of the original contract, and, with this revision accomplished, will be in a better position.

North from Natal, with the land sloping sharply east towards the Amazon delta, no more railroads are encountered until almost midway along the shore-line of the State of Ceará the port of Fortaleza is reached. From this point a line runs south-west into the interior to the town of Iguatú, the track with a couple of little branches including four hundred and twenty-three kilometers. Ceará is unenviably famous for the terrible droughts which from time to time scourge and depopulate it, but when rains visit this territory it is extraordinarily fertile, crops are abundant, the fecund Cearenses return and cattle-raising is resumed. A second strip of line runs inland, almost due south, from sea-margin Camocim to Granja at the head of the bay and thence to Cratheus, three hundred and thirty-five kilometers distant. Exports of carnauba wax, of a special class of rubber (*maniçoba* = *manihot*), and of

hides, go out from the ports of Ceará, and since the last drought of 1914-15 broke in abundant rainfall there has been unprecedented planting of fine cotton which is said to promise well. The next state northward is Piauhý, with but a span of coast and no railroad as yet, although one is projected to connect with Ceará. Maranhão has two lines: one, planned from São Luis to Caxias, of which some separate sections are already in operation, and the other running from Caxias to Cajazeiras, serving interior country. An important branch, to penetrate the sertão, is projected from a point along the first-named line to Barra do Córdoba.

The last strip of railway which serves the north Brazilian coast extends from Pará city (Belem), which is situated inside the mouth of the Amazon about one hundred and sixty miles from the sea, to the sea-coast town Braganza, three hundred kilometers away. The country traversed produces Brazil nuts, tobacco, cotton and sugar, and free grants of land have been given beside the track to settlers.

For the extreme north of Brazil the great fluvial network with the Amazon as the great main channel serves as the only means of communication: it will probably remain the sole highway for a long time to come. There is a total of over forty thousand miles of navigable waterways in the Amazon valley, with service by steamers and small *embarcações* which suffice for the present needs of this immense but sparsely populated territory. The waterways of Brazil are of such extent and size that it is not possible as yet to foresee the time when they will be superseded either by rail or road.

There are in the Brazilian interior several strips of railroad which serve no other purpose but that of supplementing riverine ways; the most spectacular and important of these is the renowned Madeira-Mamoré, one of the most costly railroads in the world and the imposer of the highest tariffs. Planned for the purpose of passing the dangerous falls blocking the Madeira-Mamoré river, outlet for rubber districts of Peru and Bolivia as well as of the Brazilian State of Matto Grosso, the line was completed in 1912 by the engineers of the Brazil Railways Company. Work was originally started more than forty years ago by the initiative of Colonel Church, two or three attempts ending in failure; when the last relay of American engineers took up the task in 1908 many relics were found of previous effort, one a locomotive imported by the Collins expedition of 1878: it was cleaned up and put into use. The line as completed has a length of two hundred and ninety-two kilometers; the chief enemy to construction was the deadly climate which took a terrible toll of lives both of engineers and labourers until sanitation measures similar to those enforced in Panama were taken.

The line is said to be paying its way, but its success depends very largely upon the fate of Amazonian rubber in world markets. With the price of "hard fine" reduced by the competition of the rubber of Eastern plantations, it is difficult to see how freight rates over the railroad can be maintained at the present very high scale, necessary in order to give a return on cost; and, rich as the tributary country is in drugs, dyes and hardwoods there would have to be a great deal of development in production before the place of rubber



Porto Velho, Madeira River, in construction period of Madeira-Mamoré Railway.
Igarapé of S. Vicente, Manáos.

could be filled. It will be extremely regrettable if this remarkable line, a band of steel in the middle of a country of deep wild forests cannot succeed financially: it is one of the world lines which are life as well as time savers, for before its inauguration the annual loss in the falls of both freight and men was twenty-six per cent.¹

Another line whose *raison d'être* is the necessity for avoiding falls on a river is the Estrada de Ferro Paulo Affonso, on the S. Francisco river, extending from the port of Piranhas in Alagôas State to Jatobá, in Pernambuco territory; the line is one hundred and fifteen kilometers long, runs on the left bank of the river, and serves as a carrier for the raw material and output of the big cotton-spinning mill (*Fabrica da Pedra*) recently established. The factory obtains power from the tremendous Paulo Affonso Falls, about thirty miles distant, and several plans have been made to convey force to Bahia city, dependent upon imported fuels for generating motive power.

The third interior, river-serving little strip of railroad is in the State of Maranhão, running from Therezina on the Parnahyba river, boundary with Piauí State, to Caxias; the fourth is a line in the interior of Pará, and is still under construction although about fifty kilometers are in operation. It runs from Alcobaça on the Tocantins river past a series of troublesome runs and cascades to the Praia da Rainha, near the junction of the Tocantins with the greater Araguaia.

¹ For details of extreme interest in this connection, see *A Madeira-Mamoré* by Julio Nogueira, printed by the Jornal do Commercio press of Rio in 1913, and *A Crise da Borracha*, by Eloy de Souza, printed by the Imprensa Nacional, Rio, in 1915.

Railways in Brazil have thus chiefly served the settled sea ports, penetrating the producing agricultural areas behind them; coastwise linking from town to town has been an afterthought, and has not been greatly needed with the maintenance of good shipping service. The Brazilian lines have been criticized for lack of coherence, but the fact is that no other plan could have been followed at the time when Brazilian building began; mileage may appear small in relation to the republic's 3,300,000 square miles of territory, but it is not poor in regard to the great centres of population, all of which are grouped upon sea or river borders and possess ample shipping facilities. At the beginning of 1922, according to the calculations of *Brazil-Ferro-Carril*, there were twenty-one thousand miles of railways in operation in Brazil, with three thousand under construction and twenty thousand miles projected; as we have seen, today a great deal of interstate linking has been accomplished, as well as junction with sister republics.

Lack of coherence in operation is perhaps more open to criticism than any other point in connection with Brazilian railroads. Certain lines are owned and operated by States; others are owned by States but leased to private foreign or Brazilian companies; again there are groups of lines built, owned and operated by private foreign or Brazilian companies, and there are lines owned by the Federal Government some of which are leased to private operating companies and some operated by the Government itself. The building of the lines was extremely cosmopolitan, lines having been built preponderantly by the British but also by French, Belgian, German and, in the case of the Madeira-

Mamoré, American, companies: this entailed remarkable variety in equipment—for instance, when taken over by the Great Western in 1901 the little São Francisco line had a gauge of five feet three inches. As some other strips then acquired were narrow gauge much work had to be done before a uniform width of one meter was created.

At the beginning of the present century the Federal Government determined upon a plan of ownership of lines which has been followed as far as finances would permit; a large sum of money, of which £12,935,480 is outstanding, was borrowed in London at four per cent interest and with the proceeds many railroads were bought up. In most cases the Government decided not to operate the lines acquired, and leased them to foreign companies. As a result of the concession system Brazilian Federal accounts show the curious financial anomaly of the Government paying out sums to railroads because interest had been guaranteed on the foreign capital invested, while the same road is paying rent to the Government.

The lines owned and operated by strong British companies are quite the most prosperous in the country: many of them were fortunate in their choice of locality, each of three climbers of the Serra do Mar for example remaining the only negotiable link of the coast with interior regions: the Brazilian Government, in common with certain of the other countries where Federal control of transportation has been tried, has reaped small financial reward from lines officially operated.

In an exposition of Brazilian railway conditions made before the Rio Legislature in October, 1915, Elpidio de Salles declared that better supervision was badly

needed: "deficits constitute the normal state of the Federal services" and it is only from privately owned companies that profits are obtained, he declared, proceeding to show that from systems leased to other companies by the Union an average income of five thousand contos of reis is paid to Brazil, these contributions coming regularly from the Great Western, the Ceará-Piauí, the Viação Bahiana, Sul-Mineira, Central of Rio Grande do Norte, Madeira-Mamoré, the Auxiliare and the Santa Catharina lines. On the other hand, Cardoso de Almeida has shown that the Brazilian Government has spent 1,100,000 contos of reis (at normal exchange, about £75,000,000 or \$375,000,000) on construction and "rescission" of railroads, bearing the burden of forty thousand contos due annually as interest. Railroad debts are, however, those which a sturdy developing young land can bear better than older countries can hope to do, and Brazil certainly is not over-railroaded: Argentina, next door, with a quarter of Brazil's population and one-third of her territory, has thirty-five thousand kilometers of line.

Brazilian "estradas de ferro" have nearly all one promising feature in common: they are pioneer paths, with new towns camped beside their tracks, and new industries growing up about them: with the exception of the old mining settlements in the interior of Minas and Bahia, scarcely any development existed in the Brazilian hinterlands until the railroads drove a way; nearly all give access, and as they move farther across sertão and through forest, will give greater access, to virgin lands uncharted and unknown. In the southern states many of the concessions given to railway companies carried colonization clauses as a continuation of

the deliberate, thoroughly worked out plan of the authorities by which during the nineteenth century settlements were made of Poles, Russians, Swiss, Germans and other European races, with the object of feeding the lines and stimulating agriculture. The European War has checked these plans: settlers from Europe will in all probability be scarce for many years to come, engaged as the racked countries will be in their own rehabilitation. But to other nations where populations are crowded or conditions no longer offer wide land spaces and large agricultural rewards, the railroads of Brazil open a country of unsurpassed beauty and fertility.

What railway construction is waiting in Brazil for capital, good engineering, and—an urgent necessity in dealing with huge empty spaces—imagination? The great heart of Brazil, which is also the great heart of South America, is only newly entered by little pioneer tracks. What bold projects could open up the interior sertões to the planter?

Frontin's daring scheme to build a line from Pirapora (due west from Caravellas in Bahia) along the valley of the Tocantins to Pará has already been mentioned: the scheme lags for want of money. Another conception is that of a railroad which would run almost parallel with the Pirapora-Pará line: it would extend from Cuyabá in the middle of the diamond district of Matto Grosso almost due north along the valley of the Tapajoz river to the town of Santarem, a pretty trading point at the junction of the black river with the yellow Amazon. A third ambitious project is a railroad to run from Manáos northwards, along the valleys of the Negro and the Branco into British Guiana.

None of these schemes is less justified than the Transandine line farther south, the transcontinental lines across the United States and Canada or that conception of Cecil Rhodes, the Cape-to-Cairo road of Africa. In no case were those pioneer tracks built to serve an existing population—they brought population and consequent production along their trail over the prairie and the veldt, and these new Brazilian lines would bring people and agriculture into the sertão. The climate is unhealthy only in the swamp regions, and railroad construction with accompanying drainage accomplishment would be the best means of sanitizing the country; it is no worse than many parts of India, East and West Africa, and the low-lying borders of the Caribbean where successful railroads have brought malarial jungle into such a condition that white men dwell there with safety, and a hardy native race can cultivate the rich soil.

Engineering difficulties are probably least in the Cuyabá-Santarem plan. There is less *matto* (thick woodland) country, no important system of *serras* to climb; much of the track would run on the high level land of the Matto Grosso interior. The regions served could be expected to produce meat and hides from the enormous pastures of the State; minerals from the mountains of Goyaz; hardwoods from the northerly forests; rubber from the same forestal lands, together with dyes and drugs; the line would greatly encourage cattle-raising and cereal planting. The packing industry is yet in its infancy in Brazil, for the first *frigoríficos* were only opened in the latter part of 1914, and the world has not yet realized the extent to which it may attain. Brazil has more head of cattle than has the

Argentina, and almost illimitable space for scientific breeding; she has areas for cereals which could make her a rival granary of the world. She has room and to spare for one hundred million population.

But her two great interior states, Matto Grosso and Goyaz, the heart of Brazil, with their two million, one hundred and twenty-five thousand square kilometers of land, are traversed by less than five hundred kilometers of railroad. Small wonder that their combined population is only about half a million.

A new influx of bandeirantes is needed. They need the same big imagination of their antecessors, the same grit and indomitable will: they should carry gold in their pockets, surveying instruments in their hands, and behind them they should bring an army of workmen, in lieu of the earlier bandeirante's sword and slaves. Some day the task will be accomplished: it rests with the capitalist of today to say whether he or his successors will take it up.

III. Shipping

The rivers of Brazil, highways of necessity, and a wonderful penetrating system in themselves, are quite well served; the Amazon river with its tributaries comprises a fluvial network of over forty thousand miles, and the producing areas are served partly by steamers and also by small launches and native embarcações which fearlessly traverse narrow water lanes almost closed by verdure, darkened from the sun by walls of tropic green, and negotiate the runs and cascades of the more distant reaches. The excellent steamers of the Amazon Steam Navigation Company are now

part of the interests of the Farquhar syndicate, but formerly belonged to a British firm which acquired the rights of the early Brazilian operators. To force the sale of the Amazon company, a few years ago, a number of new steamers were brought from the United States and put into use; when rubber boomed there was freight for most of them. But today, with the object of their introduction attained and at the same time a shrinkage of commerce upon the Amazon, many are idle. In lines outside the Port of Pará these vessels are lying, empty, motionless, just so much good money thrown away for lack of foresight.

Besides the ships of the "Amazon Steam" serving the route between Pará, and intervening ports (Santarem, Itacoatiara, Obidos, etc.) to Manáos, ships run up another thousand miles to Iquitos, and also up the Madeira to the hither side of the Falls, where the railroad ends. The English Booth line and the Lloyd Brasileiro also run up from Pará to Manáos, and there is a service on the Tapajoz and Tocantins by small steamers. The Amazon has all the riverine service that is called for, and chiefly feels the need of more ocean-going steamships.

The São Francisco river is served by a line belonging to the State of Bahia, the *Navegação Bahiana*, which runs up and down the navigable stretch between the headwaters and the Paulo Affonso Falls, touching one railhead at Pirapora in Minas Geraes and another at Joazeiro in Bahia. The Paraná river is served by the ships of a Paulista company, running up and down from Itapura to the Tibiriça ferry, and up various affluents, while every coastal town traverses its nearby rivers with small steamboats privately owned. One of the



Water-front of São Salvador (Bahia).
Floating docks at Manáos, Amazonas.

most actively traversed water regions of Brazil is the Lagôa dos Patos in southern Rio Grande, where communication between the towns at each end of the lagoon is carried on entirely by boat. The Brazilian has been in the forefront of enterprises helping in the water communication between port and port in Brazil, and, as the thriving condition of the Lloyd Brasileiro demonstrates, is able to go abroad and compete with foreign companies.

The Lloyd had a marked advantage after the War started in being able to offer neutral transportation for passengers and freight, and while as a matter in which all Brazil was interested the charges for coffee carrying were long kept at a low level, there has been during the last year a natural tendency to raise general rates under tempting conditions. When the British Government's Statutory List went into force in Brazil, about March, 1916, the British boats serving the Amazon were unable to carry rubber shipped by firms of Teutonic ownership; the Lloyd thenceforth remained the sole carrier of German-shipped rubber, and it appears reasonable to suppose that this fact had something to do with the Lloyd's price of transportation to New York rising to fifty-four cents per cubic foot while Booth's were charging their British and their neutral customers but thirty-four cents. All South American services made big money while these rates held, and for the Lloyd palmy days were especially opportune after a long season of poor returns. In common with the Central Railroad, it has been in the past an instance of a non-paying governmental company, but with drastic reforms and present good management it is in an enviable position.

Sea communication between Brazil and the rest of the world is carried on mainly by European steamship companies: good work is also done by the fleet of the Lloyd Brasileiro, which in addition to serving most ports of the country maintains a busy tri-monthly passenger and freight service to New York. Japanese vessels call at south Brazilian ports, as also do ships of the Australasian trade; the most conspicuous laggard in the shipping world was formerly the United States. In sailing-ship days American shipping was busy in these waters, but the lines were gradually displaced by more enterprising service from Europe; before the war the harbours of Brazil sheltered fine ships of the Royal Mail, Lamport and Holt, Booth, Harrison, Hamburg-American, Compagnie Générale Transatlantique, Transportes Maritimes, the Sud-Atlantique, of Italian and Austrian lines, Scandinavian, Belgian, Dutch—every flag was common but that of the United States, and when this entered it was at the stern of an oil tanker or a sailing vessel bringing lumber. The lines connecting with Europe were many; sailings to New York were few; service from New York direct to Brazil was still rarer, for the European lines created a dexterous commercial triangle by which merchandise of European origin came across the Atlantic to Brazil in ships which discharged their hardware and textiles, took on a load of coffee and hides for New York, there discharged the Brazilian goods and re-loaded with North American grain or cotton and with this steamed across the Atlantic home again.

The war stimulated direct service between the United States and Brazil, several lines now competing for business formerly held by Europeans; fast steamers offer quick passenger and freight service, following the hasty war revival of the wood-built sailing-ship:

during 1915 there was a remarkable increase of activity in these vessels, and the writer has seen ten or more at the same time lying in some bright Brazilian port, their long graceful lines of the schooner taking one back to the days of Midshipman Easy or Tom Cringle of the famous Log. Many shipowners of these sailing craft must have made fortunes, for whereas in normal times they would have gladly carried freight for three dollars a ton, they were able to get four to four dollars and a half and so on in an ever ascending scale until over fourteen dollars was taken, and with a somewhat haughty sniff at that in late 1916.

In 1916 the only steamers under the United States flag operating in Brazilian waters were oil tankers, the coal-carriers of the Berwind company, and the vessels of the United States & Brazil S. S. line, carrying the products of the United States Steel corporation and taking back manganese ores and general cargo. Later, with the creation of a big American mercantile marine by the U. S. Shipping Board, and the allocation of a large number of ex-German steamers to the service of the United States, strongly sustained direct lines between North American and Brazilian ports were created which carry immense quantities of coffee in exchange for manufactured goods. Chilean, Cuban, Peruvian, Argentine and Uruguayan vessels now visit Brazil from sister Republics, and her own mercantile marine has undergone a remarkable development.

Not only did the Cia. Nacional de Navegação Costeira and the Cia. Commercio e Navegação add in a most enterprising manner to their fleets, but the Lage firm created important repairing and ship-building yards upon an island in Rio Bay, which performed great service to the Allies during the war; and the Government-

supported Lloyd Brasileiro began to send its steamers far afield to North American and European waters.

The list of the Lloyd's vessels presently received notable additions. At the outbreak of war a large number of German and Austrian steamers took refuge in Brazilian ports, and there lay for two and a half years, idle and rusting. After Brazil's entry into the conflict many of these ships were brought into use, seventeen being added to the national fleets, while twenty-eight were chartered to France. By the middle of 1922 France had returned these vessels in first-class condition, and the bulk of them were permanently added to the Brazilian mercantile marine, the Lloyd counting forty ex-German steamers out of her total fleet of one hundred and two. Brazil's claim for the price of the coffee seized by Germany at the beginning of the war, for the four Brazilian vessels torpedoed, and the maintenance of about seven thousand German sailors, is offset by the value of these merchants ships.

Smaller Brazilian lines are the Amazon River Steam Navigation Co.; the Cia. de Navegação de Maranhão; the Cia. de Navegação Bahiana; the Empresa Brasileira de Navegação; the Lloyd Nacional; and the Lloyd Transatlantico Brasileiro. The service to Brazil performed by the home-registered lines is proved by statistics: for out of 24,736 vessels calling at Brazilian ports during 1920, 19,542 were under the flag of Brazil. It is true that the size of the ships was comparatively small, the tonnage of nearly 25,000,000 being divided between 15,000,000 "Foreign" and 10,000 Brazilian, but the low average is due to the small boats employed in various riverine services. The Brazilian merchant service is the largest in South America and performs invaluable interstate transport work.

CHAPTER V

INDUSTRIES

THE COFFEE INDUSTRY OF BRAZIL

THE huge coffee industry in Brazil will not receive a great deal of space in this book for two reasons: the first is that the subject needs a special monograph to deal with it thoroughly, and there is an entire literature on the subject, especially excellent in French, Portuguese and Italian; the second reason is that coffee culture and marketing is so highly organized that there is little room for outside enterprise. Existing plantations are probably quite capable of taking care of what new planting may be required—and this likely to be in the immediate future: the drastic checks given to planting by the authorities after the terrible fright of the great over-production of 1906, that led to the much-discussed Valorization, have done their work so thoroughly that at the present, with the elimination of many thousands of trees owing to exhaustion, there is room for extended planting on São Paulo and Minas fazendas. Brazilians, to whom life on a fazenda is always pleasant, are large owners of coffee-producing lands, and are quite aware of economic conditions, as well as being experienced growers and exporters of coffee. I do not, therefore, advise any tyro to enter upon the business of a coffee fazenda; such plantations offer good opportunities for investment, but apart from that angle do not call for outside activity.

There are many foreigners in the coffee-producing business in Brazil, of course. Italians, besides supplying a very large percentage of the labour on the S. Paulo estates, are considerable owners of plantations; the Dumont Estates, English owned and operated, are world famous; and the greatest single owner of coffee trees in the world, possessor of thirteen million shrubs, is Francisco Schmidt, who began life in Brazil as a poor German immigrant.

The first coffee plants brought to Brazil were of the *liberica* variety and were planted in Pará at sea-level, a situation to which this kind is not averse. This was in 1727 and when in 1761 the Mother Country remitted taxes on coffee from her American possessions, cultivation was encouraged and spread south to Maranhão, Ceará, Espírito Santo, Minas and Rio, eventually reaching the red diabasic soils of São Paulo. The variety grown here is chiefly *café arabica*, preferring an upland habitat, but in the course of years Brazil has developed hardy hybrid varieties of her own.

A couple of sacks of coffee are said to have been sent out from the south early in the nineteenth century, but real business did not develop until after Dom João arrived and promulgated laws freeing Brazilian trade from its swaddling clothes. Between 1835 and 1840 export began in large quantities, the latter year recording 1,383,000 sacks sent abroad for sale; slave labour was used, and the interior was searched for the deepest blood-red lands, found in their richest belts in São Paulo State.

By the year 1870 Brazil was exporting three million sacks annually (of sixty kilos, or about one hundred and thirty pounds, each); before the end of the century the

output was ten million sacks, but meanwhile Brazil passed through a severe labour crisis. Abolition of slavery in 1888 left the plantations without an adequate supply of workers: it was necessary to supplement the free negro element remaining at work with more "braços"—the eternal need of Brazil. Experiments had already been made in colonization by Dom Pedro, and these proved the excellence of the Italian labourer; prompt measures were taken by the State as well as by private *fazendeiros* to bring agricultural workers from North Italy, the breach was filled, and so successfully that today out of a population of three million people in S. Paulo State, one million are Italians. Disputes occurred in early years owing to the disparity of race, and partly the lack of experience of the planter in dealing with white labour, but the State Government took up the cudgels on the part of the immigrant, saw to it that he was paid justly and that his condition was economically sound—to the great advantage of coffee cultivation in Brazil. This was the work of the *Patrão Agrícola*, a Brazilian invention which owes much to Dr. Sampaio Vidal; its successful operation was instrumental in contenting the immigrant who came to work on coffee plantations, and while it was at first regarded with suspicion by some *fazendeiros*, eventually received their cordial co-operation as a source of mutual benefit.

Not only São Paulo but the coffee-growing regions of interior Rio, Minas, and Espirito Santo, sought immigrants officially: in spite of efforts there was no section of Brazil so successful as the southern State. *Colonos* who were brought to Minas melted away to São Paulo, perhaps chiefly on account of the "sympathy of num-

bers." São Paulo eventually remained the only State with an organized, active immigration system.

At the end of the nineteenth century big prices were paid for coffee: on a few occasions a sack fetched one hundred and thirty-five francs, and large quantities were sold at ninety-five and ninety-seven francs. Cost of production was about fifty francs, and sixty-six was considered a fair return on investment; the industry was greatly stimulated by these profits and planting began feverishly all along the lines of deposit of the richest red soils. These new plantations came into bearing four or five years later, and in the crop season of 1906-07 a staggering yield was ready for an overwhelmed market. The bounty of nature brought Brazil face to face with ruin.

São Paulo State harvested 15,392,000 bags; Rio de Janeiro State offered 4,245,000 bags; Espirito Santo and Bahia together had another half million. Altogether Brazil had over 20,000,000 bags of coffee for sale, to a world whose annual consumption was then not much more than 17,000,000 bags; and in addition to the new Brazilian crop there was a harvest from Mexico and Central America of 1,500,000 bags, from Colombia of 1,000,000, with another half million from the East and 400,000 from the West Indies—and the not to be ignored contribution of real Mocha coffee of 115,000 bags.

Nor was that all. There had been a big Brazilian crop in 1901-02, reaching the then unprecedented figure of 15,000,000 sacks, and with a world consumption at that time of only 13,000,000 there was a large surplus of this coffee left in hand, as well as stocks of other varieties. Prices went down, and the planter was

only saved by the imminence of a fall in exchange which meant that although his coffee sold for less gold than normally, yet this gold brought so much more Brazilian paper when exchanged that he was able to pay operating expenses and still count a profit in national currency.

From a gloomy level of thirty francs a bag, coffee rose in 1904-05 to about forty and fifty francs; but the threatening feature of the situation was retention in world warehouses of a stock averaging 11,000,000 bags. When Brazil was confronted with 20,000,000 bags of the new 1906 crop she thus had to consider a market which already held seven-tenths of the coffee needed annually by the world, apart from other sources of new supply.

To throw her coffee upon Europe and the United States meant the ruin of the premier industry of Brazil. After a series of hotly debated discussions, which had begun with the menace of the big crop of 1902, the State of São Paulo, with the support of the Federal Government and in agreement with the States of Rio and Minas, decided upon the famous, greatly abused and passionately defended Valorization Plan. The methods adopted may be open to criticism, but some remedy had to be sought, and the plan had the merit of boldness as well as the sanction given by success; the fact that this success was partly adventitious would probably prevent recourse to like measures at future times. The "Taubaté Agreement" forming the base of the plan obliged the contracting states to sell their coffee at not less than a given price,¹ to prevent exportation of grades below Type Seven; to commence prop-

¹ 32 to 36 milreis for the first year and 40 afterwards, for Type Seven beans.

aganda work abroad to increase coffee sales; to collect a surtax of three francs per bag on all exports; and to limit new planting of coffee. It was farther suggested that the surtax proceeds should be held by the Federal Government and used for the amortization of the loan to be made, creating a Caixa de Emissão e Conversão to deal with financial aspects of the Plan and to regulate exchange—an excellent measure which was eventually carried out.

Difficulties checked the original agreement and in the end São Paulo faced the situation alone—meanwhile the harvest was coming in, and the price of coffee dropped below thirty francs a bag—obtaining a preliminary loan of £1,000,000 on August 1, 1906, from the Brasilianische Bank für Deutschland, for a one-year term; in December £2,000,000 was obtained through J. Henry Schroeder & Company of London, and subsequently the National City Bank of New York negotiated another million sterling. The money was used to buy and store the coffee of the Brazilian plantations, and was rendered sufficient only by the co-operation of fazendeiros and exporting houses.

In June, 1907, São Paulo held 8,000,000 bags of coffee, buying only high types and through the sole agency of Theodore Wille and Company, a strong coffee exporting firm of Brazil. When Minas and Rio protested against the exclusion of their eight and nine type coffees from the stores, the Federal Government at last actively assisted, lending the State of São Paulo ten million francs for the purchase of the lower types. In July, 1907, S. Paulo stopped buying. She had acquired over 8,000,000 bags, one-third of the total purchase price of 400,000,000 francs coming from foreign

loans and the remainder from advances by commission houses in Brazil on coffee consigned to their keeping. Subsequent sums for the redemption of this coffee were obtained: two million pounds sterling came from Rothschild's through the Federal Government, and a similar sum was obtained by the lease of the (State) Sorocabana railway to the Farquhar syndicate.

With the exception of a few hundred thousand sacks all this coffee was sent to different world markets for storage until opportune sales could be made; for a whole year not one ounce of it was sold, and then, when the next Paulista harvest turned out to fill only five million bags, the preciously guarded coffee was dealt out warily to a firm market at an average price of sixty francs a bag. Without this action Brazilians say that the price must have fallen to twenty francs.

At the end of 1908 financial adjustments were made; older debts were covered by a new loan of £15,000,000 arranged with an international syndicate headed by Schroeder of London and the Société Générale of Paris. These houses took £5,000,000 each, and the remainder was distributed between Germany, Belgium and New York. The loan was guaranteed by the coffee surtax, raised to five francs a bag, and by the seven million bags remaining in international warehouses. Havre, with nearly two million bags, was the greatest holder of the valorized coffee, and it continued to be sold during the next five years only when the price offered profits.

When the European War broke out stocks of this coffee amounting to three million sacks still lay in the countries suddenly rendered belligerent—it should be mentioned here that coffee improves by careful keep-

ing. The combined stocks in Hamburg, Bremen and Trieste totalling 1,200,000 bags were at once taken over by the Teutonic governments, and the price (about £4,500,000) paid to a Berlin bank; it got no farther because proceeds of the coffee sales being mortgaged to London bankers, transfer would "benefit the enemy." Germany was in this case only following the same financial rules as other belligerents, but Brazil was placed in the invidious position of innocent bystander, and in 1922 was still trying a way out of the difficulty. Adding the value of the Antwerp stock also under German control (718,000 sacks) São Paulo was owed nearly seven million pounds sterling, and this sum together with the price of the Havre stock, 1,216,000 bags, was about equal to the foreign debt of S. Paulo.

Although payment for the seized coffee stocks was necessarily delayed, São Paulo was by this suddenly opened market for her coffee relieved of the anxious time that might otherwise have been hers after the 1914-15 crop was harvested. A large crop was once more the result of perfect climatic conditions following small *colheitas* (harvests) of one or two previous years.

Early in 1915 the Federal Government prepared to lend São Paulo one hundred and fifty thousand contos of reis with which advances were to be made to planters, enabling the retention of surplus coffee—a variant of the valorization plan which was more generally approved. But by good fortune sales

of Brazilian coffee far exceeded expectation; the Scandinavian countries enormously increased their purchases and although a general idea prevailed that it was largely passed on to Germany, no objection was for a long time raised by the Allies.

<i>Country</i>	<i>1913</i>	<i>1915</i>	<i>1920</i>	
United States....	4,914,730. ...	7,061,319. ...	6,248,000	bags of 60 kilos.
Germany.....	1,865,632.		545,000	" " " "
France.....	1,846,944. ...	2,449,223. ...	1,540,000	" " " "
Netherlands....	1,483,097. ...	1,486,994. ...	376,000	" " " "
Austria.....	1,016,824.		80,000	" " " "
Belgium.....	444,988.		320,000	" " " "
Argentina.....	249,045. ...	269,987. ...	285,000	" " " "
Great Britain....	246,161. ...	413,786. ...	73,000	" " " "
Italy.....	237,126. ...	710,800. ...	1,002,000	" " " "
Sweden.....	212,034. ...	2,333,386. ...	386,000	" " " "
Spain.....	108,928. ...	106,329. ...	145,000	" " " "
Total exports..	13,267,449. ...	17,061,319. ...	11,525,000	" " " "

Prices, 1921—down to 7 m. bag; 1922 15816 m. In 1921 shipments were checked by the slump, and the Brazilian Government bought and held 4,500,000 bags. Prices, fallen to 7 milreis in 1921, recovered to over 15 milreis per 10 kilos in early 1922.

Agricultural maps of Brazil, freely and courteously handed to any visitor at the Escriptorio do Informações do Brasil in the rue St. Honoré in Paris, show a huge patch of green in the middle of S. Paulo State and extending to a point very near the frontier of Minas Geraes. This patch represents some seven hundred and twenty-two million coffee trees, covering a total space of over two million acres.

At least one hundred million pounds sterling is invested in coffee plantations, and, with an output of an average twelve million bags, income from crops is not less than twenty-five million pounds sterling a year.

Advancing into the interior when the advent of railroads made cultivation of the *sertão* a commercial possibility, the culture of coffee in Brazil and especially in São Paulo is carried on upon a large scale: the plantations are great businesses, scientifically operated. The number of trees on a good estate is likely to run up into millions, although no other single grower rivals Colonel Schmidt's production of eleven or twelve thousand tons of coffee. Visiting a fine *fazenda* one is aware of seeing the inside of a commercial undertaking of striking magnitude, where activity is regularized, the whole life of the *fazendeiro* and the *colonos* subordinated to the supreme interest—at least during the rush season of the *colheita*. Looking from the windows of the *fazendeiro's* residence, which is generally upon a little eminence, one sees an ocean of dark green shrubs, planted in perfectly even lines, stretching away in unbroken symmetry as far as the eye can see. The São Paulo land chosen for coffee very often lies in long gentle slopes, its deep purple-carmine tint in sharp contrast to the glossy emerald coffee leaves, and down and up over the undulations run the rows, often extending for eight or ten kilometers. The storehouses, pulping machinery, and great cement drying grounds where the coffee is laid in the sun, are frequently in the hollow where the indispensable river runs; rows of neat little houses of labourers, the Italian *colonos* who plant, cultivate and gather the coffee, stand within sight. In the background is the area of wild woodland, for



The S. Paulo Coffee Industry.

Labourers' houses; the coffee harvest; drying grounds; view of coffee plantation.

"no fazenda can prosper unless it has a certain amount of *matto*," say the Brazilians. In the flowering season a coffee estate is a lovely sight, the sturdy shrubs strewn so thickly with waxy white blossoms that it seems as if snow had fallen on them; the air is clean, cool and sunny, and bees hum over the sweet-scented flowers. The trees are larger than those seen in Central America, are unshaded, and generally three or four roots stand together to make the bush. The ground beneath the shrub is kept carefully weeded.

When the round berries turn red harvesting begins. Men, women and children turn out, trained to strip the berries from the slender little branches without injuring the tree; the whole *fazenda* is in a bustle, the water-channels are racing with scarlet berries carried along in the stream, and the machinery house is noisy. When the berries are pulped and the twin beans freed and cleaned, the business of packing begins; day by day wagon loads of sacks leave the *fazenda* for São Paulo city, consigned to Santos, and thence to some country overseas. Brazilians appear to love *fazenda* life; the wife of a coffee *fazendeiro* will often take as keen and business-like an interest in the work as her husband does, discusses theories of planting with spirit, and will show you all the details of the new imported machinery. There is a true hospitality and geniality permeating the *fazenda* in Brazil; very large sums are often made, and while quantities of coffee money have been royally wasted on extravagances, there is a class of strong business men in plantation work who put profits into improvements, follow new ideas, and build up their estates from year to year in an admirable manner.

It is in São Paulo, and especially about Riberão Preto, Campinas, São Simão, S. Carlos, Dous Corregos, Botacatû,—all along the lines of the fans of railroad—that the great coffee estates are found. The original *Coffea Arabica* has some naturalized children in Brazil of great merit and hardihood; the *Nacional* or *Commun*, the delicate *Bourbon*, yellow *Botacatû*, the big aromatic *Maragogype*, all have their defenders. From these plantations come the hundreds of thousands of tons of coffee that have made Brazil the premier coffee country of the world, and brought her to this eminence in a remarkably short space of time. The development of coffee culture in Brazil, and the simultaneous development of public taste for its essence, is one of the great industrial stories of the nineteenth century.

The interior of Rio State, with its endless series of little round hills crowned with coffee shrubs, is an assiduous producer; farther inland Minas Geraes substituted cotton with coffee when the United States began to sweep world markets with her product, but is now going back to cotton here and there as the demand of her own factories brings unheard-of prices for native fibres; she is however a regular supplier of coffee, in common with her neighbour Espirito Santo, and the more northerly state of Bahia. North of Bahia commercial production ceases, but, as in the case of cotton, shrubs may be seen all along the Brazilian littoral, up to Maranhão and Pará—of an African variety which does not need hilly country.

The world is steadily drinking more coffee. Consumption was only able to take ten million bags in 1885: the estimate for 1922 is 22 million bags. It is this

reflection which preserves the *fazendeiro* from having nightmare whenever he sees a fine *colheita* promising. Increased sales of coffee seem to be partly the result of greater world demand for non-alcoholic drinks, but have been undoubtedly developed wherever a systematic propaganda has been carried out. São Paulo State went deliberately and level-headedly into the advertising and demonstration business; the campaign was first started in Great Britain, by the São Paulo Pure Coffee Company, which roasts, packs and sells good grades of beans. Numbers of cafeterias were established in which strong, hot, sweet Brazilian coffee was perfectly served. Later on the plan was carried to other European countries—notably France, Germany and Austria, all good customers of Brazil—to North America and even to Japan.

Recently the São Paulo Pure Coffee Company was acquired by the Brazilian Warrant Company, an enterprising house established in Brazil, with branches in São Paulo city, Santos, and Rio de Janeiro, and headquarters in London: a specialty is made by this company of advances against coffee, as well as sugar, cereals and general merchandise, while they are also commission and consignment agents. Exporters of Brazilian coffee are legion, but it is instructive to note how large a proportion of the names listed are Brazilian; coffee is not one of the businesses which the South American leaves to the foreigner.

Coffee accounts for forty per cent of all the Brazilian export. As far as S. Paulo is concerned, coffee represents over ninety-seven per cent of her exports. In 1915 the state's total exports were worth a little over

465,000 contos, and of this coffee was worth 453,000 contos. In S. Paulo city itself if one is not in business circles the predominance of coffee might escape the visitor but not so in Santos; here, in the coffee port, the apparatus of shipping has largely been constructed with coffee-loading as the aim: special mechanisms serve the ceaseless stream of laden coffee bags that arrive at the lines upon lines of *armazens* (warehouses) on the dock front. In the stony streets the scent of coffee prevails; at every doorway burly negroes are hauling out sacks of the aromatic bean; the cluster of banks down the main business street, some Brazilian and many branches of foreign houses, all live upon coffee. The dealers, commission men, shippers, roasters of coffee represent the commercial existence of the port.

The coffee industry is one which is a satisfaction to contemplate because it is a clean, wholesome business, from first to last; the conditions under which it is carried on are not only ably organized and in a prospering state, but the workers as well as the estate owners and shippers have a chance to make money and lead pleasant lives.

THE RUBBER INDUSTRY ON THE AMAZON

Rubber, the elastic gum bled from certain trees and shrubs, has been so long associated in thought with the sweltering, shadowy forests of the great Amazon river, that it is not a matter for wonder that for many years after Wickham made his famous experiments with rubber seeds, first in Kew and then in the East, both Brazilians and the general public paid little heed to the possibility of plantation rubber as a commercial rival of

the Amazonian product. It was not until 1910 that manufacturers began to take plantation rubber seriously and to use it freely, and not until 1912-13 that production from these sedulously cared-for trees drew level with and surpassed the output from Brazil. To-day, with plantation rubber offering something like one hundred and fifty thousand tons of crude rubber, and Brazil maintaining her average output of about thirty-seven thousand tons, the race would be a very uneven one if it were not for one factor, the wonderful resiliency of "hard fine Pará" which renders it unequalled in quality.

The two industries, that of Brazil and of Malaysia, are strikingly at variance in almost everything except the fact that they deal with extraction of the latex of *hevea brasiliensis*. In Brazil we have enormous areas of dim, sultry, water-bordered forest, where wild rubber trees are sought for amongst eighty or so other varieties of trees: where the labourer is, or at least imagines himself to be, a free agent, bound only by his debt to the central store, working when he thinks fit, living in a solitary hut without society, and making a little balance of profit at the end of the season if he is lucky; he buys all his necessities of food and tools in the dearest market in the world, and sells at the price forced upon the Amazon by the rival industry half the world distant. In the East is an organized industry operated by wealthy companies, where land was cleared, rubber planted methodically, hired labourers working under control, paid by the day, where the latex is coagulated in factories, milled into fine sheets, and goes to market in a form that does not bear outwardly any relation to the big black balls, smoke-cured in the seringueiro's hut,

sent out from the Amazon. Nevertheless it is the unorganized, unscientific industry which yields the product with the highest price on international markets, and, huge as is the deluge of plantation rubber today, there is no good reason why the Eastern and Amazonian industries should not continue side by side. Arabian coffee has not been commercially ruined on account of Brazilian production of *coffea arabica*.

There are in the world very many plants and trees yielding rubber of differing qualities. Three kinds of elastic gum are exported from Brazil in addition to the latex of the *heveas*: they are known as mangabeira rubber, from *mangabeira hancornia speciosa*; maniçoba, from the *manihot* plants of several kinds (euphorbias, and first cousins of mandioca); and caucho, drawn from the *castilloa elastica* tree. All these have their places in world markets, but, as also in the case of balata from the Guianas, and the gum of the guayule shrub in Mexico, it is not upon these rubbers that the great manufacturing industries of the world are based. That distinction belongs to the *heveas*, native dwellers of the deep, hot Amazonian valleys.

The elastic, resilient, waterproof properties of rubber were first discovered by the native children of the Americas, both in South and Central America and Mexico. When Hernan Cortés took his handful of conquering Spaniards into Mexico he found the Aztecs playing a game with bouncing balls made from *castilloa*, but during three centuries the Europeans visiting the New World did not dream of turning the gum to any utilitarian purpose. The first traveller who took recorded note of native use of rubber for water-proofing was the French scientist, de la Condamine, who came to

Peru and travelled down the Amazon in 1743. He took specimens of what he spelled as "caoutchouc" back to Paris. In 1779 Priestly noticed that the gum would erase pencil marks on paper; small pieces were sold for this purpose, and as the chief supplies came from the East Indies (from the *ficus elastica*) the name India-rubber clung to the product. In 1823 Charles MacIntosh found that rubber was soluble in benzine, and so led the way to its commercial adaptation—thinned out, spread into sheets, rendered amenable; the idea applied to waterproof coats immortalized his name.

In 1832 the Chaffee & Hoskins firm, founded in the United States, began manufacturing water-resisting objects, and thus laid the foundation of the present great rubber business in North America; their company, the Roxbury India Rubber Co., had in its employ a young man named Goodwin, and when this experimenter discovered that the gum would resist great extremes of heat and cold when sulphur was mixed with the solution, the process of "vulcanization" was the result, and rubber was made applicable to a score of new uses. Its great commercial employment dates from this time.

The Amazon valley began to send coagulated gum abroad: before this occurred, objects, chiefly high boots, were sent all the way to Pará to be water-proofed with a series of layers of the fresh latex. The industry was still in existence in the 1850's, but died a natural death when rubber manufacturing got into its stride. It did not make this movement until large quantities of crude rubber began to reach world markets, and such amounts were not shipped until the Amazon received a great addition to its labour supplies. In 1877-79

one of the terrible droughts that scourge the State of Ceará drove the populace out of the foodless region; hardy, daring, the Cearenses swarmed up the Amazon, into the reaches of the upper tributaries, into the Acre, searched the forests for *seringueiras*, and gathered a great harvest of latex. A little later the bicycle was invented and popularized, rubber tyres were called for in addition to the established demand from the boot and shoe trade, and rubber export became one of the big businesses of the industrial world.

The Amazon had shipped 31 tons in 1827; 156 tons in 1830; 388 tons in 1840. In another ten years she was shipping 1,467 tons; in 1860, 2,673 tons; 1870, 6,591 tons; 1880, 8,680 tons. Three years later she was sending over 11,000 tons, year by year adding about 1,000 tons until by 1890 the supply and demand came to 19,000 tons. It may be said here that up to the present demand has invariably taken the year's supply; with great volumes coming from the Eastern plantations a surplus may occur, but with the present greatly stimulated demand such a condition is not yet in sight.

Steady rises in Amazonian production went on at the end of the century, and 1903 registered the receipt of over thirty thousand tons; when in 1906-07 the crop attained thirty-eight thousand tons output it had about reached its maximum with the quantity of labour available upon the Amazon. Production has fluctuated about this figure for the last ten years. It could be increased, if the estimate of 300,000,000 untapped trees in the deep interior forests is anywhere near the mark, to almost any amount; but the present production is the work of some one hundred and twenty thousand *seringueiros*, chiefly Brazilians, with some

Bolivians and Peruvians, and there is no immediate prospect of labour supplies being largely augmented.

The sensational leaps in prices that have occurred in world markets since rubber became commercialized have brought great quantities of money to the Amazon; many fortunes rocketed to the skies, and there was a period when a golden flood flowed up the river as well as down, when Manáos, the rubber city of the riverine interior, displayed more luxury for its size than Paris, and the best diamond market in the world was in this remote spot. Anything sufficiently extravagant could be sold; a stream of jewels, silks, fine wines and foods, furniture, carriages, adventuring people and solid cash went up the Amazon, passing for a thousand miles nothing but the green matted walls edging the huge yellow river and an occasional palm-leaf shack perched half in the water, and one or two trading points, to find their objective in the brilliant little mushroom town on the Rio Negro. There was one year when the yield of taxes from rubber to the public revenue of Amazonas was twenty-three thousand contos of reis, and this at an exchange of over £66 to the conto, means £1,520,000 or nearly \$8,000,000. Practically the whole of this money was collected and spent in Manáos, then (1899-1900) a city of fifty or sixty thousand population—much of it “floating,” as its present reduction to about forty thousand demonstrates. It was in the golden period of Amazonian rubber exports that both Manáos and Pará clothed themselves in all modern civic graces; fine public buildings, well-paved streets, street-cars, good sanitation, water-supplies of unimpeachable source, electric light, and numbers of splendid private dwellings remain as a return for some of

the floods of money earned by the gum of the deep forests. There was at the same time tremendous waste and an enthusiastic "graft" era, which has left a heavy burden of debt upon the Amazon. Numbers of unfinished buildings, some begun at great cost, still stand in Manáos, eloquent witnesses to the headlong gambling spirit that informed this city a few years ago. The Amazon refused to believe that any but temporary shadows could fall upon the rubber industry: there had been several periods of depression from various causes before plantation rubber loomed into view, but always "something happened to help the Amazon," whether quickened demand or a fall in exchange which reduced local costs; now the European War is operating to stimulate American demands for Brazilian rubber, and to that extent faith in good luck is again justified, but the rubber-producing centres will need good works as well as faith if the present rewards, comparatively modest as they are, are to be maintained.

In 1874, and for some years afterwards, Amazonian rubber prices ranged between fifty-two and seventy-five cents (U. S. currency) a pound; between 1879 and 1880 there was a quick climb, due to the bull operations of a Brazilian syndicate which bought and held rubber. It was temporarily successful, prices during the last year of the ring's existence touching one dollar and twenty cents and never falling below ninety-five cents, but in 1884 the bottom fell out, and rubber took a hasty dive to forty-eight cents—recovering, however, in the course of the next year, in response to demand for rubber tyres, to ninety-eight cents. For the next ten years rubber fluctuated about sixty, seventy and eighty cents, with new industrial uses developing

in Europe and North America and demand always keeping pace with supply; by this time the total yield offered to the markets was about fifty thousand tons yearly, the Amazon supplying half and the rest coming from West Africa, Mexico and Central America. In 1896 the price rose, ranging between ninety cents and one dollar and twelve cents, and the Amazon boomed again as it had done twelve years before; Manáos, the terminus of ocean transportation and the central collecting point for the rubber of the upper rivers, bedecked herself in these rosy days. Five years later the failure of the American Crude Rubber Company, a distributing firm domiciled in New York, threw large stocks of the *goma* upon unready markets, and the price slumped. Rubber merchants upon the Amazon would have suffered more than they actually did had not the factor of exchange come to their aid; between 1899 and 1906 the value of the milreis oscillated all the way from sixpence to fifteenpence, and while to some Brazilian operations a low rate of exchange meant embarrassment if not ruin, it spelt salvation to the dealer in raw products. In 1906 exchange was fixed by the establishment of the Conversion Office in Rio, but by this time rubber was fetching such good prices that the Amazon was again basking in prosperity. The prices paid for Amazonian rubber during the period from 1903 to 1915 show the rise of the third great crest of rubber waves to the dazzling height of 1910, when the merchants who would have sold at seventy-five cents and made a profit found themselves with a dollar and a half, two dollars, two and a half and then three, without knowing why; money came like dew from heaven. In many instances it also melted as readily:

1903.....	78 to 1.13 cents
1904.....	94 to 1.30
1905.....	1.18 to 1.35
1906.....	1.22 to 1.37
1907.....	82 to 1.21
1908.....	67 to 1.24
1909.....	1.20 to 2.15
1910.....	1.50 to 3.00
1911.....	93 to 1.75
1912.....	93 to 1.30
1913.....	59 to 1.10
1914.....	49 to 1.15
1915.....	75 to 1.00

While the feverish drama of the Amazon was going through scenes typical of a gold-mining rush, the curtain was slowly rising upon another rubber scenario away over on the islands and peninsulas of Malaysia. Its movement passed almost unnoticed and unheeded by the very people who had most cause to watch it with alarm.

In 1871 an Englishman named Henry Alexander Wickham sailed from Trinidad up the Orinoco river, there studied latex-yielding trees and eventually made his way to the Amazon through the interior forests by way of the river Negro. His book of notes was published in London in 1872—*Rough Notes of a Journey Through the Wilderness*, with his own excellent drawings to illustrate his story of actual labour in the “ciringa” districts. In 1876 he was back again on the Amazon, with the *idée fixe* of rubber so firmly in his head that, going up the Tapajoz from Santarem, he filled his cases with seventy thousand seeds of *hevea brasiliensis* and carried them over to Kew Gardens in London. Here

in carefully graduated hot houses the oval, mottled seeds were germinated, and in June of the same historic year Wickham was carrying his baby seedlings to Ceylon, believing that this island offered the climate most similar to that of the Amazon to be found under the British flag.

Two thousand nurslings were thus transplanted to the Spice Isle, lesser quantities going to Java, British Burma, Singapore and other points which appeared to offer the needed conditions for healthy growth. It was in Ceylon that the first young rubbers flowered in the year 1881; there is no earlier record of the blossoming of *heveas* outside their habitat in the Amazonian valleys. The resulting seeds were used to create new plantations, but the whole thing was still in a purely experimental stage; time proved that many saplings were planted under incorrect conditions, but the planters had nothing but theory as their guide; they cleared land—at great expense—kept it clean while the young plants grew, and waited; they did not know if the *heveas* would live, or that, living, they would produce latex coagulating into commercial rubber. Nor did the Amazon rubber dealers know it or believe it. When tales of Wickham's enterprise came to Brazil a law was passed forbidding the export of rubber seeds, but this locking of the stable door after the loss of the steed was of no more avail than the subsequent measures promulgated to prevent export of the uricury nuts used for smoking the latex.

That the Amazonian industry could be duplicated in the East was not seriously credited. The thing was impossible! The plants would die; or if they did not die they would not yield latex; if they yielded latex it

would coagulate into such wretched rubber that no market would accept it. Disease, blight, drought, would ruin the presumptuous plantations—something, in fact, must happen to prevent such an incredible, absurd event as rivalry between the famous and unique “black gold” of the Amazon and a plantation step-child. The few people who spoke out about the danger were ignored.

While unbelievers still protested the deluge of plantation rubber began. In 1900, 4 tons of crude rubber were exported from the East; in 1905, 145 tons; in 1910, over 8,000 tons; in 1912, over 28,000 tons; in 1914, well over 71,000 tons; in 1915, nearly 107,000 tons. The output for 1916 is variously reckoned at 140,000 and 160,000 tons, from an area totalling about 1,350,000 acres in Ceylon, Malaysia, Dutch East Indies, India and Borneo.

When plantation rubber was first offered to manufacturers they were not greatly interested; it was taken rather grudgingly and at prices well below those paid for the black *pelles* of the Amazon to whose perfections and imperfections the industry was thoroughly accustomed. It was the artificial forcing up of prices in 1910 that sent manufacturers into the arms of the planters, for, while plantation rubber profited by the golden rain of that year, it did not attain the value of “fine hard Pará.” Today plantation rubber sent to the markets in sheets of creamy “crêpe” or clear brown gum is used for almost every manufacture demanding rubber; there are still some complaints that it is over-milled, that the treatment it undergoes takes the “nerve” out of it, and for this reason Amazonian rubber remains triumphant in certain lines requiring

the highest resiliency—as, for instance, rubber thread. In spite of the preponderance of quantity of the plantation product since 1913 there has nearly always been a margin of price in favour of Brazil; during September and October, 1916, “fine hard Pará” fetched about seventy-five cents a pound in the New York markets while Plantation only brought sixty-five (due to shortage of Amazonian supplies through shipping difficulties as well as droughts upon the upper rivers which, impeding navigation, prevented normal supplies from finding exit); the difference in price is larger than is apparent, for reasons resulting from differences of preparation of the two products. Plantation rubber, product of an organized modern industry, is placed upon markets in such a form that the manufacturer can send it direct to his mills; the average amount of impurities contained in the sheets is less than one per cent. Amazonian rubber on the other hand contains anything from fifteen to forty per cent of impurities, which may include leaves, sticks and dirt due to sheer carelessness, or gums other than that of *hevea*, old nails, lumps of wood and axe-heads, deliberately introduced by the *seringueiro* to add weight to his *pelle*. Add to these considerations the cost of cleaning Amazonian rubber and the loss in time while this operation is performed, and it is plain that the manufacturer really pays a great deal more than the few cents’ difference of the market price for the Brazilian product; this money advantage might be largely retained by the Amazon if methods, not necessarily those of the East, but more careful and cleanly, were employed in coagulation.

The entire series of processes of Amazon rubber

production, from the day when the *matteiro* clears a path in the forest from rubber tree to rubber tree, until the shipper boxes the split halves of the *pelles* in the *armazem* in Manáos or Pará, is in remarkable contrast not only to plantation methods, but to the system under which that other great Brazilian export staple, coffee, is prepared for market. It is the contrast between an industry that has evolved itself from methods first discovered by Indians of the forest interior, and another whose processes are mapped out on a preconceived plan. To this day the rubber dealers on the Amazon will tell you that they do not know the cost of production of a kilo of rubber; all that they or the collectors know with certainty is that it must necessarily cost less than the price at which the rubber is marketed—a smaller amount must be paid, and adjustment has to be made in the *seringal*, not in New York or London; with the inflated prices paid for every simplest necessity of life upon the Amazon, nearly all imported because the craze for rubber-collecting some years ago led to the abandonment of even such prolific crops as beans and mandioca, a time of stress falls most severely upon the people who are least able to bear it. Remedies for the ills of the Brazilian rubber industry have been suggested and demanded for many a year by the more far-seeing Brazilians; there is perhaps no better presentment of the subject than the *paracer* read to the Brazilian Congress in December, 1913, by Eloy de Souza, afterwards published in Rio under the title *A Crise da Borracha* (The Rubber Crisis); he speaks of the condition of "economic paradox" by which Amazonas "gave millions upon millions of gold without any part of this being used for the prosperity

of the immense region where so much wealth was produced" and tells that when plantation rubber was looming in competition with the Brazilian product the authorities were entreated to arm themselves against the danger, but "the echo of these voices was lost in the wide desert of national indifference." When the truth could be no longer avoided steps were at last taken, with nothing but the waste of enormous sums in the tragi-comedy of the "Defesa da Borracha" as the result: its failure was no fault of the men who constantly spoke out about conditions, such as Miguel Calmon, the Deputy, the journalist Alcindo Guanabara, Dr. Passos de Miranda, and the "genial and devoted Apostle of the Amazon," Euclides da Cunha.

Almost all of the people engaged or interested in the rubber business of the Amazon are agreed upon certain measures which should be taken to put it upon a sounder footing; they are, briefly:—

1. Increased production of cleaner rubber, whether obtained from Amazonian plantations or by opening out new forestal wild regions.
2. Reduction of living expenses of the rubber-collector, by increased Amazonian cultivation of cereals, beans, mandioca, fruit, vegetables, etc.
3. Creation of a sturdier and larger labour supply, by rendering rubber regions healthy, improving living conditions, and thus inviting and retaining permanent dwellers.
4. Reduction of export taxes imposed by the State authorities of the rubber regions.

The question of Amazon plantations is hotly debated. A few exist, and are living proofs of the fact that planted rubber kept clean of other growth yields

latex at four or five years, at which time it is as large as a wild rubber twelve years old; but opponents of the system ask why they should plant "*when Nature has already planted?*" and declare that the best thing to do is to tap the latex of more of the reserves of the interior, calculated at three hundred million trees. Arguments in favour of this system include insistence upon the superiority of the latex from matured trees slowly developed in their native habitat, the chief reason of the high resilient quality of the Amazonian product; it is along the upper rivers of the Amazonian fluvial network that the "black" *hevea* is found most abundantly, yielding latex of the best variety, tough, elastic, resilient, and always fetching a better price than the *fraca* (weak) rubber from the latex of the "white" *hevea*, or the product of the "red," which coagulates badly, and is listed as "entre fina" instead of "fina." It is partly because the seeds which Wickham took from the Tapajoz in 1876 were of the "white" *hevea brasiliensis* variety, common in these lower regions, that the product of the plantations is more or less of the "fraca" quality; only a few hundred acres of the entire Eastern area under cultivation is planted with the fine "black" rubbers.

Can the untouched rubber regions of the upper rivers be opened up? The districts richest in *seringueiras* are frequently on the margins of these rivers, accessible by boat, but there are other areas thickly sown with the trees which, as in the Acre Territory, could be served best by a railroad line, such as has been projected to run across this region. Other plans deal with drainage of forestal areas, now rendered exceedingly unhealthy by their swampy, mosquito-breeding

condition, and the introduction of immigrants accustomed to torrid climates. At present the working capacity of the collector is reduced from a possible two hundred and ten days, during the seven months of tapping, to an average of one hundred and twenty, chiefly as the result of sickness: he produces thus only about four hundred and fifty kilos of dry rubber, when under better conditions he could be expected to market about seven hundred kilos.

A few years ago Dr. Oswaldo Cruz, a Brazilian authority on tropical diseases, made a report upon the health conditions of certain Amazonian regions and those traversed by the Madeira-Mamoré railway: he said of Santo Antonio that there are "no natives of this place; all children born there die," and that here (its ill-fame is not unique) "the region is infected in such a manner that its population has no conception of what good health means; for them the normal condition is sickness." Brazilians born are as much subject to disease, it appears, as strangers, for among the workmen employed in the construction of the Madeira-Mamoré line ninety per cent of the natives of Brazil and seventy-five per cent of the foreigners were weakened by hookworm. Sharp changes of temperature in some districts, producing a devastating pneumonia; dysentery; beri-beri, and the worst and constant scourge, malarial fever, haunt certain of the interior regions: until a better medical service is established, and measures taken to render the country more healthy through engineering work, and through field cultivation, an increase of permanent dwellers in the deep rubber regions cannot be expected. Until then Amazonia can scarcely be other than what Eloy de Souza calls an

“invaded region” which has been subjected to a “social phase of pure conquest.”

Cheapening of living expenses can be done just as soon as the fertile Amazon valley again supplies enough food for its population: there was a time, between 1886 and 1891 when the cereals grown sufficed for needs; today, with the threat of falling prices for the precious *goma*, cultivation has been resumed to an extent which is encouraging, but only a year or two ago Pará, Amazonas and the Acre were together importing beans, rice, and sugar to the value of 11,346 contos (over three million dollars); dried meat (*xarque*) to the value of 7,400 contos; *bacalhau* (dried cod), 846 contos; live cattle, 2,000 contos; tobacco, 1,000 contos, and preserves costing 2,600 contos, among other importations. Almost all the above list could be filled from Amazonia if the rubber-collecting fever, relaxing, permitted the development of other industries.

The price paid for many articles of prime necessity upon the Amazon is fantastic. While such rates are maintained it is a matter for admiration that Amazonian rubber can be placed upon the markets at all, in competition with the plantation product; it can only be done by the reduction of the *seringueiro's* earnings to a minimum, and this will eventually lead to his extinction if conditions are not remedied. The following is a list of what are considered the chief articles needed by the collector for his lonely sojourn in the forests during the gathering season, with prices in milreis:—

	Price in		In the		Price to Rub-
	Rio	In Pará	Acre	ber-collector	
5 alqueires of farinha ¹ . . .	20	....27\$500	....100	....	175
40 kilos of sugar	14	....26	.... 45	....	80
25 kilos of coffee	24	....25	.... 34	....	100
128 kilos of lard	16	....20	.... 36	....	100
50 kilos dried meat	40	....40	.... 77	....	150
50 kilos of feijão (beans) 12.500	....15	.... 51	....	....	100
16 pounds of tobacco . . .	11	....22	.... 53	....	120
5 gallons of kerosene	4	.... 4	.... 11	....	30
Half-sack of salt	1	.... 1\$500	.... 8	....	15
40 kilos of rice	20	....20	.... 36	....	100
Half-case of soap	3	.... 4	.... 11.500	....	20
30 litres cachaça (rum) . .	15	....15	.... 46	....	105
3 boxes cartridges	24	....30	.... 33	....	45
Medicines, clothes, etc. . .	120	....130	....180	....	250
Total	324\$500	....380\$	....721\$500	....	1.390\$

The price of an outfit for the season thus varies from about 324 milreis in Rio to 1390 milreis in the forest, or between, say, 80 and nearly 350 dollars.

If the collector in the course of his season's work produces four hundred and fifty kilos of rubber, worth, at a good price of about five milreis, 2:250\$000 (two and a quarter contos, or about five hundred and sixty U. S. dollars at 1916 exchange), he has left only seven hundred and fifty milreis to carry him through the rest of the year, and to support his family back in Ceará: but even this modest sum is reduced by the river freight of the rubber before it is marketed at Manáos or Pará, three hundred reis per kilo; rent of the *seringal*, commission to the aviador, and frequently freight of the *pelles* from the interior of the forest to the water, which items are likely to add up to another four or five hundred milreis.

Denunciations of the "truck" system, and the prices

¹ Alqueire = 40 litres: Farinha = flour (of mandioca).

charged to the rubber collector are common; but the supplier of foodstuffs, etc. (the *aviador*) himself takes long risks and is bound to insure himself against them. His customer (*aviado*) may become ill and unable to work; he may die; he may, if he can elude the river guards and traverse the steaming interior forests, run away, although in these regions where the river is the only highway, this does not often happen. Also the price of rubber may drop—rubber has been a business so speculative that it has become a gamble in which the *aviador*, himself caught in a deeply-rooted system, takes long odds. He makes money nearly always, and the ownership of much of the great areas of Amazonian rubber forest has passed into his hands, but he is scarcely to be blamed for securing his profits in the manner decreed by the system; to change the industrial routine would be to effect a revolution upon the Amazon.

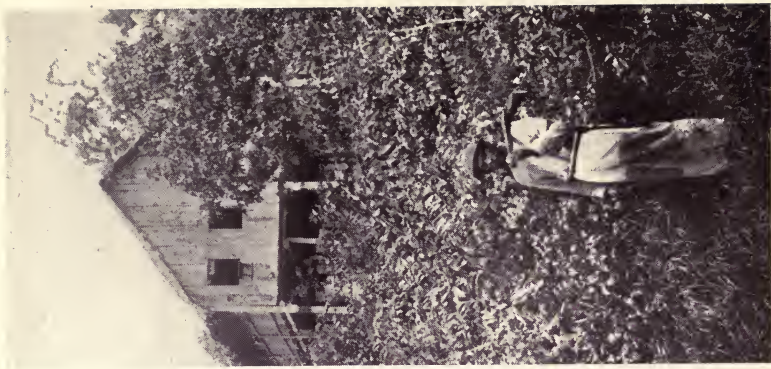
The approach of the dry season upon the Amazon heralds the incoming from other northern regions, generally Ceará, of a host of workers. Anyone who has travelled on the steamers going up the river at the beginning of the rubber season has looked down upon the deck where throngs of people are herded together, their hammocks slung in tiers one above the other; at times of drought whole families come out from the "*distritos flagellados*," and men, women and children are crowded in an intimacy which would be more trying than it is were it not for the apparently unfailing good-nature and mutual courtesy of these northern peasants. Much of their simple cooking, washing, and toilet changes are perforce unsheltered; gentle, easily amused, they never seem to complain, but, playing their in-

evitable guitars and singing their *modinhas*, they watch the yellow flood of the great river, bordered with the line of distant forest, so vast that ideas of size are lost in its sweeping monotony. Arrived at Manáos the collector goes to the store of the *aviador*, gets his outfit of tools—cups for collecting latex, big knife (*machado*), little axe, bucket, and metal cone for smoke-regulation in the coagulating process—as well as food and such clothes as he may need, possibly adding a gun, and when the cost of his lodging has been added to the bill, he may set out in one of the *gaiolas* that ascend the upper rivers, en route to the *seringal* where he has arranged to work. An average *seringal* contains fifty *estradas*; to each *seringueiro* (collector), two *estradas* are allotted, tapped on alternate days and each *estrada* (literally road or walk) contains, in a good *seringal*, an average of seventy to one hundred and twenty trees. Before the *seringueiro* does a stroke of work there has been a heavy outlay by the owner (*patrão*) of the estate for its preparation. Forestal opening is done by the *matteiro*, the expert forester whose work is probably better paid than any other manual labour of the Amazon; it is he who enters the wild forest, locates the rubber trees within a given area, and makes paths from each *seringueira* (rubber tree) to the next in the central part of each *estrada*, always ending by cutting an encircling road which runs all about the *estrada*. On this outer road the rubber collector usually builds his little hut—"more of an oven than a home," says Eloy de Souza—of palm thatch, and the tiny smoking room (*defumador*) where each day's supply of latex is coagulated.

The work of the *matteiro* is paid according to the number of rubber trees found and prepared for tapping;

he gets about the equivalent of one dollar for each tree; Woodroffe reckons that in the cases when the patrão of an estate has advanced money for the steamship fares of his imported labourers, advanced food and equipment, and paid for preparation of the *seringal*, each man represents an outlay of "quite £100 by the time he stands up under the trees to tap them." It must not be supposed, therefore, that because rubber is wild upon the Amazon that it costs nothing to collect it; on the contrary in spite of the lavish hand of Nature expenses in the wild regions of South America are far higher than they are in the East, where land has been cleared and each sapling patiently planted and tended.

The *seringueiro* has no easy life. He gets out of his hammock before dawn, and with his lantern fixed to his head makes his way through the forest, laden with his little *machadinho*, the universally used and abused axe with which the trees are gashed, with the big knife, the *machado* or *machete* inseparable from the Central or South American, and perhaps a gun in case any edible animal of the woods is encountered. As each tree is reached it is hastily gashed, a little metal cup (*tigelinha*) fixed below each wound to receive the milk which immediately runs out; when he returns at last by way of the outer path to his hut it is past six o'clock and quite light. If he has a family with him, his *senhora* has prepared his coffee, but if as is usual he is alone he will now light a fire, drip his coffee, prepare a little food, and smoke a *cigarro*. Later in the morning he must make a second round, if the milk is not to coagulate in the cups; he takes his bucket (the *balde*), tips the contents of each little cup into it, carefully inverting these on sticks at the foot of the tree, to prevent the clotting of drippings



Rubber on the Amazon.
 Hevea brasiliensis tree, scarred by tapping.
 Smoking the day's collection of latex.
 Hut of the Seringueiro.

and the invasion of insects. When he returns he may have four or more litres of milk which must now be coagulated in the *defumador*; the process may take half an hour or over two hours, according to the amount brought in and the quality of the latex. A fire is made with nuts of one of the *attalea* palms, generally "uricury," which give off a remarkably acrid smoke with properties for rendering the rubber just what it should be that are the despair of chemists: no substitute has been found that equals it. A metal cone a couple of feet high is placed over the well-started fire, to bring the smoke into a narrow channel at the top; the *seringueiro* takes a prepared piece of wood, dips it into the bucket of milk, or pours milk over it with the *cuia* (little bowl made of a half-gourd) and holds it over the smoke. The milk coagulates instantly, turning pale brown on the outside; layer after layer is added, a skin at a time, until all the latex in the bucket is coagulated. It may be late at night before the *seringueiro* has finished his work, for in the course of the day he has walked anything from six to ten miles, and every part of the operations has been performed by him alone. It is fortunate that his housekeeping work is limited to the preparation of his food: practically the only furnishing of his hut is his hammock.

To produce a *pelle*, the big black ball which may be seen in Pará and Manáos on the wharves, in warehouses, on the pavements, whole or sliced in halves with their creamy hearts displayed, or floating down the tributary rivers on rafts, the *seringueiro* has to work for about a month. Each day's collection of latex is coagulated on top of the previous rubber until the ball is made to what the *seringueiro* thinks is a con-

venient size. Day after day, only interrupted by sickness, he labours in the sweltering forest at this toil, eating food of very limited variety, without exchanging a word, perhaps, with another human being for weeks at a time; each *seringal* is supposed to be under inspection, to avoid maltreatment of the trees, but as a rule this supervision is a fiction. Small wonder that when the collector at last leaves the *seringal*, and takes his rubber to Manáos, he spends a few riotous days, limited by the amount of his money balance remaining after the debt has been paid to the *aviador*. The *aviador* it is who also buys the pelles and in the busy season when rubber begins to come in, these stores present a curious sight. Sometimes the *seringueiro*, in good years, saves money; he may buy a *seringal* or a little store of his own; a few fortunes have thus been made from the collector class, but they are rather the exceptions that prove the rule.

These conditions, under which a nominally independent collector works in a rented *estrada* and sells his rubber to the store-keeper to whom he is in debt—and who is often also the owner of the *seringal*—are general as regards the collection of the latex of the “black” rubber trees of the upper Amazon. This is the origin of the *fina* class of rubber, with *sernamby* or scrap as a kind of by-product, result of carelessness; the *fina* , however, is usually at least eighty per cent of a good workman’s product, and this is the rubber which, with *caucho*, has made Manáos.

Caucho is rubber produced from the milk of *castilloa elastica*, growing in profusion along the banks of the Rio Branco, tributary of the Negro, in North Amazonia and on many streams of Peruvian origin; the industry

connected with this tree is really independent, the result of individual searchings for trees. Parties go up these rivers, hunt in the bordering woods for the *castilloa*, straightway cut it down and bleed it for the last drop of latex, and go on their way.

Down near the mouth of the Amazon, where the "white" rubber trees are most commonly found, it is not unusual for collectors to own sections of forest with their little homes at its edge; they, too, are almost independent—of everything except the industrial conditions upon the Amazon, and the rubber prices fixed far away in London or New York.

Nearly all South American States depend upon export and import taxes for their main revenues, and it is a fairly general rule that native products leaving the country pay heavily for that privilege. In Brazil all import dues are imposed and collected by the Federal Government, and are similar throughout the country without respect to the special conditions of separate states; the export taxes are imposed by the State Governments, without restraint. In some regions the "pauta" or export tax is changed every week or so in conformity with prices in world markets, a board sitting specially for the purpose of making these constant adjustments. Some Brazilian products are taxed to what may be called a reasonable extent, but in others exports have been bled out of existence, while still others are barely able to enter world markets, staggering under their load. How many exporting countries would put upon a product facing competition abroad a tax equal to one-third of its value? This is the weight with which Amazonian rubber went to market for many years: the combined charges of the

State, municipalities, and other smaller items added up to over thirty per cent of the "official value" of the product.

In response to appeals, export taxes were reduced after the outbreak of the European War, and during the year 1916 State taxes, together with dues put on by cities, amounted to about twenty per cent of the value of the rubber—a sufficiently heavy burden, but which Amazonas proposes to increase again; at the same time the product of Matto Grosso pays only twelve per cent, an equal amount is imposed upon rubber originating in the Acre Territory, while that exported from Bolivia, Peru and Colombia, but finding its exit by the water highways of the Amazon, pays only five per cent. As a result of these lesser dues collected by sister countries, there is a certain amount of smuggling done: rubber originating near the boundaries is passed across, and exported as if coming from one of the three Republics named; that such evasion of taxes is limited is due to the lack of roads or of any communication means besides those of the rivers, all of which are watched by Government agents. At the same time that the Amazon imposes this burden upon her rubber, the Eastern (Plantation) product pays nothing at all when the market price is below 18 pence—say thirty-six cents—a pound, and when it stands above two shillings a tax of two and a half per cent of the value is paid.

Consumption of the entire supply of marketed rubber was, immediately prior to the European War, almost evenly divided between North America and Europe: one of the industrial adjustments made after

hostilities began was the shifting of a larger share of rubber, and rubber manufacturing, to the United States, so that in 1914 she took fifty per cent of the marketed total, one hundred and twenty thousand tons, and in 1915 increased these purchases to nearly sixty-two per cent of the total marketed, or ninety-seven thousand tons out of about one hundred and fifty-eight thousand.

Distribution of the world's crop in 1915:—

United States.....	61.5....	97,000
Great Britain.....	9.6....	15,072
Russia.....	7.6....	12,000
France.....	7.2....	11,500
Italy.....	4.8....	7,500
Germany, Austria.....	3.8....	6,000
Canada.....	2.5....	4,000
Japan and Australia	1.6....	2,500
Scandinavia.....	1.4....	2,252

The course of the next few years may see Brazil herself on the lists as a rubber-consuming country. For fifty years she has exported rubber, crude, and such manufactures of rubber as she has used have been imported from the United States or Europe; she imported in 1915 about six hundred and eighty-three tons of rubber manufactures, chiefly tyres, worth a million dollars, which was less than the imports of 1913, and which might show greater diminution if the unfortunately conceived law intended to protect "fine hard Pará," but which resulted in paralyzing rubber imports, were sustained. This alteration in the tariff, operating early in 1915, changed the old import tax of five per cent ad valorem to a scale with violent dif-

ferences; rubber manufactures made with the Brazilian product were charged one hundred reis a kilo (a fraction over two cents U. S.) while articles made with foreign rubber were taxed ten milreis (say two dollars and sixty cents) a kilo.

An excellent idea, warmly applauded; but when the time came to apply the law it was found impossible to discover the real origin of the rubber, and in order to avoid any chance of letting in foreign material practically scot free the official valuers charged all entering articles at the high rate.

Thus a consignment of two hundred pneumatic tyres which under the old law would have paid about 2:200 milreis in duties for entry were under the new tariff charged 22:000—or let us say about \$5,500 instead of the former \$550, for import taxes alone. Needless to say, importing houses left rubber goods in the customs-houses while they appealed to the authorities for relief from this too paternal measure. Some of the Amazonian rubber merchants have defended the idea, which is good enough in theory, but in practice it seems to have been as little useful as that extraordinary commission charged with the *Defesa da Borracha*, which in the years 1912-14 spent about twenty-eight thousand contos of reis (over \$7,000,000) in salaries, investigations, recommendations, experiments and printed matter, and has today not an iota of improvement of Amazonian conditions to show for the money.

Brazil has a few rubber factories of her own, generally small, but doing a satisfactory and increasing business; the Brazilian Government has also concluded an arrangement with the Goodyear Tire Company for the

erection of a factory which should greatly increase national rubber manufactures. The first modern rubber factory in Brazil was established in São Paulo State, in 1913, by Theodore Putz and Company, where solid tyres, tubes, stamps, valves, and other articles are made; it has a capital of two hundred contos and an annual turnover of three hundred contos, paying twenty-five contos a month for labour. Five hundred kilos of Pará, and one thousand kilos of *mangabeira* rubber are used monthly. Another firm of recent origin is that of Berrogain & Cia. in Rio, turning out a variety of manufactures and prospering.

The future of rubber production is a question frequently discussed. It is not immediately probable that the Brazilian output will greatly increase from its average of twenty to thirty thousand tons, not only because more labour is not as yet available, but also because the untapped resources away from the easily reached river banks can scarcely be reached without large outlays on roads, drainage, and other expenses connected with opening-up, which are not more than planned for the time being. Plantation rubber has not yet reached its expected maximum, but no very great areas have been added since 1911, and it is reckoned that with an average yield of four hundred pounds an acre the world's output will in a few years place from three hundred thousand to three hundred and thirty thousand tons of dry rubber on the markets. Demand by the year 1930, if it kept up at the same ratio as the last five or six years, would require a great deal more than this, no less than three hundred and seventy-three thousand tons of rubber. This will not occur unless automobile sales in the United States keep up also at

the same rate (tyres for this industry already take over 100 thousand tons of rubber) but even with a diminution in the increase there appear to be good prospects ahead for the rubber industry: Germany, for instance, will be demanding crude rubber in great quantities when the European War comes to an end, for in spite of the ingenuity of German chemists it is plain that synthetic rubber is not a success. If it were anything like a substitute for the real thing the Central Powers would not have made such constant efforts to obtain even small quantities of the precious gum through the blockade of the Allies. The war has definitely disposed of that spectre. Synthetic rubber requiring a base of a special turpentine is said to be produced at a cost four times that of the gum of the *hevea*, and that figure alone would dispose of it as a commercial possibility, apart from the limitation of turpentine supplies, the need for mixing the solution with real rubber, and the practical demonstration of its unsatisfactory quality.

PACKING-HOUSES, MEAT EXPORT, AND CATTLE RAISING

The meat business is not a new one in Brazil, for her cattle raising states have had a surplus of beef animals ever since the first *donatarios* sailed out to take possession of their strips of coast, and brought seeds, saplings, ducks and chickens, goats, horses and cattle along with them: the cattle thrived, soon ran wild in the interior, and becoming modified by natural selection developed national types which are today quite distinctive although their European origin is recognizable. The first cattle were shipped to Brazil to the Capitania of S. Vicente in 1534 by Dona Anna Pimentel, consort of the

first captain, and manager of the interests of the colony during his absence in India.

Brazil has thirty million head of cattle. That is to say, two or three million more than the Argentine possesses. But her herds are only worth a fraction of the Argentine value because the stock is poor, some of it thin and scrubby, with but one steadily developed type of first-class quality. The scientific breeders of Brazil—and there is quite a list of them—have lacked a reason for developing their work until recently. In the absence of the packing-house there was no demand for beef beyond that of the *matadouros* (town slaughter-houses) and the *xarque* factories. For the *xarque* makers any class of animal would serve: a Hereford of pure blood would bring no more than a *zebu* unless he happened to weigh more.

Xarque making is the ancient meat-drying industry, invented by who knows what hunter in bygone ages; it is the *biltong* of Africa, the *tasajo* of the Argentine, the jerked beef of the North. Well salted and dried, it is good food enough, and France did not disdain to buy it from Brazil for the use of her troops in 1915-18. The southerly states of Brazil are the great supporters of cattle stocks, and there are the extensive beef-drying factories; Rio Grande slaughters over half a million head of cattle for this purpose every year, the number rising to its maximum in 1912 with nine hundred thousand head, and chiefly ships the *xarque* produced to other Brazilian regions; it is the *carne secca* of that beloved Brazilian dish, the *feijoada*, eaten all over the Union. The coastal and northern regions of Brazil, comparatively poor cattle regions, are so much dependent upon dried beef imports that the *xarque* indus-

try should have a ready market in the future as in the past: but since 1914 a rival has risen up seriously threatening the old industry in prestige.

Almost simultaneously two packing-houses, both in S. Paulo State, began demanding cold storage space in vessels calling at Santos, and refrigerator cars on railways leading to the port. Brazil, to the astonishment of the markets, was offering chilled and frozen beef. At any other time she might have received a welcome less enthusiastic, but her offer came at a time when Europe needed every pound of meat for army use; the Brazilian product was tested by Smithfield standards, found good, and today has its place in overseas meat markets. It is a modest place, but today beef is taking its stand among the “*principaes artigos da exportação*”—hides have long stood in the list of thirteen favoured names—although the end of the war diminished overseas demands.

During 1915 shipments were made in increasing amounts month by month, the total for the year reaching about 8,514 tons, with a value of 6,122 contos. In 1916 shipments rose to nearly 34,000 tons; in 1917 to over 66,000; but sales decreased after the close of the war, when contracts for supplying troops in the field ceased, and markets closed in the slump of 1921.

The first *frigorifico* of Brazil was built by Paulista enterprise with Paulista capital, in the far north-west of São Paulo where the best pastures extend. The Companhia Frigorifica e Pastoril built its plant near the terminus of the Paulista Railway, at Barretos, and is headed by Dr. Antonio da Silva Prado, an energetic builder-up of his State and a man with many honours and interests. Opened in 1913, the *frigorifico* first

supplied chilled meat to the city of S. Paulo; export was not seriously considered until the war in Europe began with its demands upon world food supplies. The first Brazilian shipment of exported meat was sent to England in November, 1914, an experimental ton and a half. During the ensuing year that country took four thousand, three hundred and sixty tons, Italy over two thousand tons, and the United States nearly the same quantity.

The figures displayed a steady rise all through 1915, January's ten tons being quickly outclassed by April's two hundred and ten and June's over five hundred and seventy tons; by November Brazil was shipping two thousand tons a month. The standard was more than maintained as time went on cattle raisers improving animals for sale to meet demands, and proving the fattening quality of Brazilian pastures. But until after the close of 1918 little blood stock could be imported, and in 1922 an expert calculation gave 12% as the proportion of fat cattle in Brazil.

The output of Barretos was speedily rivalled. In May, 1915, another packing-house started operations, at Osasco on the outskirts of S. Paulo city. It is the property of the Continental Products Company, capital and personnel originating in the Sulzberger house at Chicago, and it is independent of, but has friendly relations with, the Farquhar group of interests, which include large railway control and a thriving land and cattle company.

The Osasco plant is, like Barretos, an excellent specimen of its class, operating with fine up-to-date machinery and all modern packing-house devices; on the edge of S. Paulo city, separated from the railway only by

a strip of open grassy country, this establishment has the advantage of a short haul for its meat. The São Paulo Railway has to carry the product but fifty miles to Santos port. On the other hand, the Barretos plant's position has the advantages of being in the heart of the best cattle country, and of getting both animals and labour at low prices; the journey from Barretos to S. Paulo, by the Paulista line, takes about fourteen hours. Brazilian employees are used at both packing-houses, the industry occupying about a thousand workmen. During 1916 a third *frigorífico* was opened, on the docks of Rio de Janeiro, but this chiefly performs cold-storage functions, and before the close of 1919 ten packing-houses were in operation or building. General world depression in 1921 was responsible for the closure of most of these establishments for more than local demands. Few complaints have been registered in regard to quality so far; the Brazilian beef is on the whole smaller than that to which the meat markets are accustomed, and it was found that the quarters did not fill the space allowed for similar Argentine and Uruguayan meat when shipping first began. Dr. Prado says that the average weight of beeves slaughtered for export during the first year of operation at Barretos was only two hundred and eighty kilos. But this small, fat-less meat has a superior flavour—as anyone who travels in South America knows well.

It is generally reckoned that ten per cent of a cattle herd is fit for the slaughterhouse: but Brazil cannot offer three million of her existing stock to the yards. She has too many varieties, probably too much of the humped breed derived from Indian ancestry, although it has warm defenders, and there is a conspicuous lack



The Cattle Industry.

The two *frigorificos* (packing-houses) in operation, at Barretos, top; at Osasco, below. Also humped "zebu" cattle of Indian descent, and, lower, a calf of native Caracú stock.



of young fat cattle. As an example of the speed with which poor stock may be improved by good, unified methods, there is Brazil's neighbour Argentina, a country which thirty-five years ago had less than nine million head of cattle, and these of a breed inferior to the Brazilian average today. Setting about her task methodically, Argentina created a complete transformation in the character of her herds, and while exporting great quantities of meat at the same time increased her stock so largely that by the year 1910 she had thirty million head. Sums spent on breeding stock were enormous during this period: in 1906, the banner year of importation, Argentina purchased (almost exclusively from Great Britain) 2,450 pure-bred cattle, 7,500 thoroughbred sheep, and one thousand blood horses. As a result she has animals today which take prizes side by side with pure Herefords and Durhams; the average *abattoir* price for steers is about two hundred Argentine pesos, or say eighty American dollars; she is able to record the sale of thousands of splendid creatures, amongst them a champion bull bred on her pastures which brought the price of thirty-two thousand dollars in United States currency. Today Argentina has more herds of thoroughly pure stock cattle than any other country in the world; *estancias* full of animals of fine blood, so much alike that to see them in endless lines, with white star on breast and head, is like looking at a concrete arithmetical calculation, are handed down as inheritances. Yet when the Argentine began her work she had no such advantages of modern invention as lie to the hand of Brazil; cold storage was not commercially developed, packing-houses were immature. She had to face the competition of the United

States, and world markets were not educated to the reception of South American meat. Now cold storage is an art, steamers are fitted with refrigerator space as a matter of course, South American meat is welcome on world markets, and the United States is no longer taken into consideration as a rival meat exporter.

In 1901 the United States exported 352,000,000 pounds of beef; in 1910, 76,000,000; in 1914, only a little more than 6,000,000 pounds. Argentina had caught up with her North American sister in 1905, passed and out-distanced her until she was able last year to say that her only serious competitor was Australasia. It is true that the European War has caused a revival of meat export from the United States, but home demands are today so acute that no more than a temporary reaping of high prices is at the bottom of the movement. Argentina may look for a more formidable, because a younger, rival, nearer to her northern border.

The qualifications of Brazil as a future land of fine cattle are three in the main: first, her possession of an existing *rebanho* of 30,000,000 head; next her natural pastures and good climate which permit stock to remain in the open during the winter; third, tremendous expanses of suitable lands at moderate prices. Argentina has no natural pastures; she sows alfalfa, needs five acres of it to fatten one animal for six months and is thus at an expense of \$7.50 for this purpose against Brazil's outlay of rather less than three and one-half dollars, counting the value of the five acres of alfalfa land at three hundred dollars, the cost of twelve acres of Brazilian *capim gordura* at one hundred and thirty-three dollars, and interest on the two investments at five per cent. In regard to available

territory there is no comparison; Brazil's one state of Matto Grosso could swallow the whole cattle-raising country of the Argentine, without taking into consideration Goyaz, Minas Geraes, S. Paulo, Paraná or Rio Grande do Sul.

Space and climate, however, are not all that goes to make a cattle country fattening fine stock, and it need scarcely be said that much must be done before the cattle lands of Brazil can seriously compete with those of the Argentine: the time is not yet ripe for the wild pastures of Goyaz and Matto Grosso to fatten cattle in the same proportion as Rio Grande State. This state, with an area of two hundred and thirty-seven thousand square kilometers feeds about nine million head of cattle, a remarkably good showing in comparison with the premier cattle province of Argentina, Buenos Aires, which, with a superficial area of not much more than 305,000 square kilometers, feeds seven and a half million head.

Pastures are not—except by careful fazendeiros—planted in Brazil because there happens to be a gift of nature in the way of natural grasses, the *capins* of the sertão. Some of these are good, and some would feed nothing but a goat. Brazilian stock-raisers who combine earnestness with capital plant their own best grasses and appear to get satisfactory results, while I have also seen some interesting experiments made with “Soudan” or other of the wonderful varieties of grasses with which Africa is endowed. For lack of interior pastures the cattle of Brazil are periodically brought on foot for distances which may vary from a hundred to six hundred miles; many die by the way, and the unfortunate beasts are mere skin and bone

when they arrive in the good grass country. On the São Paulo side of the Paraná river are some of the finest natural pastures of Brazil, but in many parts of the São Paulo uplands, interior Rio, Paraná, Santa Catharina, and Rio Grande, admirable cattle lands are to be seen. Rio Grande, especially towards the Uruguay boundary, is one of the most delightful grazing regions imaginable; Minas, too, shows some fine lush green grass lands, with the special advantage that cattle need never be put under shelter in the mild winter which visits this region. The good grass lands of Minas and interior São Paulo are frequently at an elevation of 1,400 feet, on the sloping plateau which is densely wooded near its dips to the rivers, and which is on the wide uplands covered with light *matto* alternating with sturdy native grass. It is not unlike the high veldt of the Western Transvaal in appearance, with the same exhilarating freshness, light and space, and the same miracle of nature performed immediately after the rains, when every inch of ground is covered with little dancing flowers and every bush is transformed into a nosegay.

Brazil possesses half a dozen technical breeding "posts" maintained by State or Federal Governments, but their number is insufficient to attack the work needed, and needed quickly; private enterprise must and does supplement government labours, but there is room in Brazil for scores of expert cattlemen with knowledge of semi-tropical conditions. Three-fourths of the State of Paraná, all Santa Catharina and all Rio Grande do Sul are below the Tropic of Capricorn, but although the great sertões of Brazil are inside the

tropical belt, the effect of this latitude is partly nullified by the height of the plateau to which the largest area of the country attains.

One of the best breeding stations in Brazil is situated at the good, modern, actively-managed School of Agriculture at Piracicaba, in S. Paulo State, reached by the Sorocabana line; good imported bulls are stationed here, as well as some fine specimens of types developed in Brazil, notably the Caracú, a well-formed animal with a pale buff hide that is well fitted to form the base of standardized herds. The Caracú already has its official herd-book. Some attempts made to introduce pure blood foreign animals have ended in the death of the importations, perhaps chiefly because their accustomed food was lacking; for this reason the opinion of many stock-raisers in Brazil is against efforts to create pure herds of, say, Herefords, as Argentina has done, preferring the selection of a sound national type, acclimated, hardy, which can be improved by careful breeding. Controversy rages about this question in Brazil, and without trying to enter into it I will quote the opinion of Dr. Cincinato Braga, one of Brazil's authorities on the subject of cattle, who says that at least six thousand pure-race bulls should be imported annually to improve the existing stock, while as a matter of fact only a few hundred enter yearly, and these chiefly as a result of private enterprise. The vexed question as to whether the introduction of Indian cattle, with its resultant inheritance of a hump in the zebú type (the hump has the disadvantage of not "packing," say some of the buyers for frigoríficos), is good or bad may be safely left to those ardent cattle-breeders Drs. Pereira Barretto, Eduardo Cotrim, Assis

Brasil, Fernand Ruffier, and many others; it is undoubted that in the Triangle of Minas Geraes, with its centre Uberaba, fortunes have been made from prolific Indian cattle, but public opinion remains perplexed. Writing from Minas in early 1916, J. Nogueira Itagyba told the tale of his experiences as a cattle-breeder—how he imported a bull from Holland, bought Caracû cows; obtained a young herd, and then when droughts came in 1913-14, lost “thirty or more head, under a deluge of ticks, tumours, insects of all kinds. . . .” He then bought a Nellore (Indian) bull, obtained a breed that was “a revelation” and came to this conclusion: “In Paraná and Rio Grande, where the climate is cold and there are fine pastures, a stock breeder with capital can raise the Devon, Hereford, Flemish, Durham, Jersey, etc.; he will have appropriate forage, and can use dips and calf-foods . . . but in wild rural regions only strong, acclimated races resisting climate and insect plagues can prosper.”

Until the development of the meat industry for export Brazil sold nothing abroad as the product of her vast herds except hides, just as in the early days of Texas when only the skins of her cattle were worth anything. Today the cow-hide leather industry of North America in particular is largely dependent upon South American production, the three republics of Brazil, Argentina and Uruguay together furnishing fifty-five per cent of all the hides sold in world markets. Now and again the export of hides leaps for reasons that do not mean good business, as when Ceará in 1914-15 shipped out, in addition to her normal sales, the hides of animals that died of the terrible drought to the number of eight hundred thousand head; looking north to

Mexico we find another big leap of hides exports after revolution invaded the cattle states, owners slaughtering their stock to avert theft by bandits.

Rise in sales by the Argentine and her neighbours since the European War has, however, been largely on account of increased slaughter in response to calls from the meat market: in two years Argentina has doubled her export of hides, Uruguay has multiplied her contribution by five, while Brazil between June, 1915 and March, 1916 shipped out thirty-seven million pounds of hides as against two and a half million pounds in a corresponding period two years previously.

The total value of Brazilian hides exported in 1915 was \$13,260,000 U. S. currency; the amount was thirty-seven thousand metric tons. Of this nearly twenty thousand tons went to the United States, Great Britain taking 6,000 tons, France less than 3,000, and Uruguay 3,400 in round numbers.

War orders account for the marked stimulation of the leather business which is dependent to a considerable degree upon supplies of cattle-hides, the United States alone increasing her exports of leather from thirty-seven million dollars' worth in 1914 to eighty million dollars' worth in the fiscal year June 1915-16.

COTTON GROWING AND WEAVING

Cotton is native to Brazil, as to other regions of northern South America, Central America and Mexico, the south of the United States, and the West Indian islands. Wild, or carelessly cultivated Brazilian cottons are despite neglect of such excellent quality that George Watt, in *Wild and Cultivated Cotton of the*

World says that when they are properly selected and standardized they will "make Brazil as famous as Egypt in the production of excellent fibres." North American cotton buyers, visiting Brazil early in 1916 were astonished to find cotton of long silky fibre produced here, and made arrangements for shipping quantities of the Seridó variety to the United States; England has for a very long time been a purchaser of the same fine qualities of raw cotton, for mixing, as Egyptian cotton is mixed, with the short-fibre product of the United States.

Cotton of one kind and another is grown all over Brazil. There seems to be no region which refuses to mother it. But the best lands, yielding most prolifically and with large areas suitable for cultivation on a great scale are in the centre, on the north-east promontory, and all along the coast to the mouth of the Amazon. Comparatively very small fragments of this belt are under cotton culture, although wild cotton and patches of cultivation of more or less merit are widely scattered; Todd, in his *World's Cotton Crop* says that Brazil "might easily grow twenty million bales, but her actual crop does not yet reach half a million bales." Now, with the encouraging measures taken by the Brazilian Government as well as the enterprise of individual firms and planters, and the new realization of the opportunity waiting for the farmer with small capital but large technical skill, experience and good sense, cotton culture should open up great spaces of land suitable for this well-rewarding form of agriculture. Brazilian cottons or their Peruvian and West Indian kin have endowed the world with fine varieties; it remains for their standardization to benefit the land of their origin.

Cotton was used by the Aztecs for making elaborate clothes, richly dyed and embroidered, long before the Spanish Conquest in 1520. Farther south, the carvings of the Maya show that that race was using textiles hundreds of years previously—as early as the beginning of the Christian Era, if the dates assigned to the Copán and Quiriguá temples are correct. In Brazil, where the inhabitants were much less socially and industrially developed, small domestic use was made of the fibre, but it had its name, *amaniú*.

Cotton (*Gossypium*) belongs to the natural order of the malvaceas, claims more kin in the New than in the Old World, and its parents are genuine tropical dwellers; there seems to be little doubt that the first of the fine, long staple cottons introduced into North America were perennials, and that they became annuals only because they were unable to survive the winter cold. Names of cottons grown in Brazil leave the searcher after details rather hazy on account of the many local appellations given them, but the scientist has classified them by the characteristics of their seeds, dividing them into eleven kinds. The first, *Gossypium herbaceum*, is not a tropical native, was brought in from Asia both here and to the United States, is not common or successful, and so may be dismissed.

G. mustelinum again “is only interesting for botanical reasons,” but is found wild in the hilly interior of Brazil; *G. punctatum* is said to be identical with the wild cotton of the United States; *G. hirsutum* is a true native of South America and the West Indies, and is the lineal parent of the “Uplands” cottons of North America. *G. mexicanum* is, together with *hirsutum*, which it resembles, grown all over the coastal cotton country of

Brazil; it is a small plant with a prolific yield. The writer has seen in the vicinity of Campos, State of Rio, tiny plants of this variety not more than eighteen or twenty inches high, bearing forty and more bolls and forms. It is true that the district had suffered from lack of rain and thus the tendency to run to growth rather than production, the agricultural curse of the tropics, had been checked. The field yielded over a bale to the acre.

G. peruvianum is a highly interesting, hardy, prolific variety, relative of the best native cottons of Brazil. Professor Edward Green says that he considers it one of the two most valuable in the country. It is a perennial, grows best in the humid North, often reaches a height of four metres, and yields a crop for at least three years.¹ Maranhão has produced it for centuries, getting a reputation for long fine fibres on its account; the percentage of fibre is over thirty-eight per cent of the total weight of the boll, a very high average, and it is undoubtedly well adapted to the river valleys of North Brazil. It is said to be identified with the carefully cultivated, irrigated cotton of the Incas.

Cultivated forms of this excellent cotton are the famous *Mocó*, grown so successfully in Ceará, Parahyba, and other northerly states, the *Seridó*, and the *Sede de Ceará*, local names of which Brazil is proud.

G. microcarpum appears to have a relationship with the *peruvianum*, and seems also to be derived from the other side of the Andes; it is credited with producing a pound of clean cotton to one hundred and twenty bolls.

¹ Professor Green says that he found one of these tree cottons in Rio Grande do Norte, of the *Mocó* variety, sixteen years old and still yielding beautiful cotton.

This is the last on the list of cotton with "fuzz" on the seeds; the remaining four varieties have clean, free seeds. Of these by far the most important is the fine *G. vitifolium*. From this stock most of the cottons described as "Sea Island" are derived, as well as the best of the Egyptian varieties, and in a genuine wild state in Brazil it still produces a beautiful long silky fibre. When grandchildren of its stock have been brought to Brazil from the United States they have rapidly degenerated, delicate nurslings of exotic temperament; beside them the old *estirpe selvagem* flourishes and yields royally. *G. purpurescens* is another black-seeded perennial, identified with the "Bourbon" of Porto Rico, and said to owe its introduction into Brazil to the French. *G. barbadense* is a blood-brother of the *vitifolium*, and like all the Sea Island-Egyptian group, is a highly esteemed producer of top-priced cotton. The fourth of this class is *G. brasiliense*, a true native, observed growing wild by Jean Lery as early as 1557.

The two most precious of the list, *Gossypium peruvianum* and *Gossypium vitifolium*, possess the advantage of being genuine South Americans; they form a magnificent stock from which the expert cotton grower can develop a product for the market which need not fear Sea Island as a rival.

Cultivation of cotton by the Portuguese colonists began very soon after the granting of the capitánias in 1530. By the year 1570 large crops were being produced in Bahia, chief centre of industrial activity, although they could not equal sugar in value. Europe was just beginning to use this material, for with the acquisition of strips of India by the Portuguese there

was an entry into European markets of Calicut "calico." Before this dawn of the cotton era Europe went clothed in leather, wool, and, on occasions of great splendour, silk. We may conclude that the clothing of the day was probably as comfortable as, and certainly more substantial than, garments of the present period, if not as sanitary: but cleanliness had not yet become a virtue. India taught Europe the use of cotton, and the spindles and looms of the ladies were filled with the vegetable fibre in lieu of wool.

In Pernambuco the culture of cotton became of more importance than sugar; farther south the Paulistas set their Indian slaves to work and were soon producing cotton crops on widely spread plantations. In the seventeenth century cotton was carried into Minas Geraes by the gold hunting bandeirantes, but it was only cultivated in the most desultory manner and when there was nothing else for the slaves to do. So complete indeed was disregard of all agricultural work that actual famines occurred in 1697-98 and in 1700-01 on account of the abandonment of plantations for gold-washing districts.

When the Marquis de Pombal practically ruled the destinies of Portugal good fortune led him to take a shrewd interest in Brazil; especially interested in the comparatively new settlements at Pará and Maranhão, and struck by the fine fibre exported from these northerly regions, he decided upon the establishment of spinning and weaving mills. In 1750 the Marquis de Tavora was given the task of engaging expert weavers for the colonies, and shortly afterwards the first cotton-cloth factories were set up in Brazil. Pombal's fatherly interest in weaving did not extend to the south; these

sections of the country should devote their time to mining and agriculture, he thought, and finding that looms were being set up all along the coast and in the interior of Minas—always a good cotton region—he passed a law in 1766 prohibiting cotton and silk weaving. It had the desired effect of checking the development of any considerable commerce, but did not prevent the use of hand looms in almost every farm, where a patch of cotton was as much a part of the crop as a field of maize. In a *relatorio* of 1779 the Viceroy Luis de Vasconcellos reported to Lisbon on the “independence of the people of Minas of European goods, establishing looms and factories in their own *fazendas*, and making cloth with which they clothe themselves and their families and slaves. . . .”

In 1785 the Portuguese Government ordered the suppression of all factories in Brazil; they must have been considerably advanced, despite the previous orders, if the decree abolishing establishments for making “ribbons, laces of gold or silver velvets, satins, taffetas, bombazine, printed calico, fustian,” etc., etc., meant anything. In spite of this the weaving of coarse cottons managed to survive, perhaps with the connivance of sympathetic Viceroys, and repeated letters emphasized the inconvenience of factories in Brazil: a *carta regia* of 1802 instructed the Governor of Minas Geraes not to allow “anyone to present himself before him unless dressed in materials manufactured in the Kingdom or the Asiatic dominions.”

The transference of the Portuguese monarchy to Brazil in 1808 changed all these ideas—which helps to demonstrate the still burning need for all rulers, of whatever denomination, to take a travelling course—

and in a few years cotton threads and cloths were freed from duties, the Prince Regent sent a master-weaver at his own expense to set up *fabricas* in the interior, and by 1820 the industry was thriving. Cotton growing was equally stimulated at this period by high prices in England; in 1818 that country was not only buying raw cotton, but cotton cloth, from Brazil.

With the development of the south of the United States in cotton production on a great scale a shadow fell over the Brazilian industry. Unable to compete with the low prices at which North America offered her bales in the early eighteen-forties the farmers of the southerly states of Brazil checked their planting, and, coffee just then dawning upon them as a commercial possibility, filled up the empty spaces in the fields with the beans of *coffea arabica*. North Brazil, with its special cottons of long staple, kept on producing these varieties for home mills, steadily at work, and for European export; a new incentive came with the Civil War of the United States when Confederate cotton shipments were contraband and English spinners were at their wits' end for raw material, but prices sank with the declaration of peace.

Since the beginning of the present century Brazilian exports of, and prices received for, national cotton have varied so remarkably that it is worth while glancing at the statistics; almost the whole of the export of this raw cotton, and of cotton-seed, went to England. If in addition to this export we reckon about fifty thousand tons as the amount consumed by the factories of the country, the whole production of Brazil can never have exceeded ninety thousand tons.

<i>Year</i>	<i>Tons</i>	<i>Value in Gold Milreis</i>
1902.....	32,137	10,701 contos (one conto equals
1903.....	28,235	11,766 “ 1000 milreis)
1904.....	13,262	7,347 “
1905.....	24,081	10,291 “
1906.....	31,668	14,726 “
1907.....	38,036	15,418 “
1908.....	3,565	1,833 “
1909.....	9,968	5,261 “
1910.....	11,160	7,934 “
1911.....	14,647	8,714 “
1912.....	16,774	9,221 “
1913.....	37,423	20,513 “
1914.....	30,434	16,556 “
1915.....	5,223	2,551 “

Exports almost vanished, to 1000 tons, in 1916, not recovering fully until 1920, when 25,000 tons were shipped.

What measures are being taken in Brazil to develop cotton culture? First let us take into consideration new governmental means of assisting the industry. When the drought of 1914-15 scorched up northern plantations the weavers found themselves paying higher prices inside Brazil than the same national cotton was bringing in Liverpool. The Centro Industrial, a very strong and useful body, asked the Government to hold an enquiry, and the also extremely powerful Centro do Commercio e Industria of São Paulo made the suggestion that duties against imported cotton should be remitted so that the mills could get cheap supplies of foreign material. Remarking on the situation the *Gazeta de Noticias* of Rio said: “On one side we have the cotton planting industry declaring

that it will face certain extinction if the door is opened to foreign raw material; on the other is the weaving industry declaring that it must shut its doors if it is not permitted to buy from foreign markets!"

The Federal Government only temporarily remitted dues, believing that the situation would remedy itself with the new crop—rain fell copiously at last in the scourged districts, and Ceará alone foretold a cotton crop of twelve thousand tons for 1916—but prepared to consider measures to open up larger areas of country to this culture. A project submitted to the Legislature at the end of 1915 suggested the construction of good cart roads in cotton districts, and the establishment of modern gins at convenient points, at the expense of the Government.

Already, three years ago, the Government had acquired the services of Professor Edward Green, a cotton expert from the United States who has been working with the double object of classifying and standardizing the best cottons for plantation in Brazil, and of noting the best regions for such plantations. At the *Conferencia Algodoeira* (Cotton Conference) held in Rio under the auspices of the Centro da Industria in June, 1916, Professor Green gave an address dealing with some phases of his labours, and concluded by saying:

"After three years of observation and experiment in Brazil I am convinced that this country, above any other, possesses excellent natural conditions for cotton production, and that the development of this great national resource depends only upon the adoption of a few simple measures:

"I. The selection and standardization of superior

types, and the production of great quantities of selected seeds for distribution.

- "2. Introduction of simple, animal-drawn cultivators, with practical instruction on their use to be given to large planters of cotton in the interior.
- "3. Stimulation by the Government of all activities related to the cotton industry, and suspension for some years of all connected taxes and duties.

"Extensive propaganda in favor of cotton growing is being animated by the far-seeing and incomparable activity of Dr. Miguel Calmon. If this work is continued in all parts of the country where cotton is cultivated there is no doubt of success. The cotton production of Brazil will find itself doubled if not quadrupled in a short time, and this country will take the high place in world markets which is legitimately hers as the greatest exporter of high-class cotton."

Both Federal and State Governments have brought technical experts from foreign countries to help in the solution of Brazilian problems; the Directorship of the Jardim Botânico in Rio, where a series of valuable experiments in tropical agriculture were carried out, was for some time in the hands of an English expert, Dr. John Willis, who brought his knowledge of Ceylon and Malaysia to bear upon Brazilian conditions; the work of the eminent Swiss, Dr. Emil Goeldi, on the Amazon, succeeded by the labours of Dr. Jacques Huber, have been invaluable in regard to classification of North Brazilian natural plants and their adaptation to commercial uses, as well as the introduction of suitable tropical fruits, etc., from other regions. The Ministry of Agriculture in Rio is the centre of much live work,

and has had a series of excellent men at its head. The brilliant Pedro de Toledo was neither the first nor the last of agricultural devotees in this post.

The work of State Societies of Agriculture is more highly specialized, and cotton has its list of societies just as coffee, cacao, sugar and tobacco have theirs. Many big cotton estate owners take a keen interest in improving conditions of production, and have been during the last few years definitely helped by the American expert already referred to and by a Texan cotton grower at the head of demonstration farms operated by the Leopoldina Railway Company. One meets in Brazil an unusually high percentage of finely educated men who are *fazendeiros*, who willingly leave the gay cities of the coast to live in patriarchal authority upon interior farms having as their sole connection with the outside world a narrow mule-track; they appear to have inherited the affection for land of their own possession which sent the early Portuguese so far afield, and which seldom seems to be mingled with any dislike of solitude. It is this feeling which scantily populates the sertão with fazendas, far removed from any town, dotting the vast interior with *nucleos* of independent life; it may be partly due to a strain of Indian ancestry, for it extends to the upper reaches of the Amazon and its tributaries, lining, at infrequent intervals, the banks of forest-bound rivers with palm-thatch huts, their foundations in the water, where families subsist upon a handful of farinha, and fish caught in the flood below them, looking with unenvious eyes at the passing boats of rubber collectors and apparently quite content with their withdrawal from the world. To such a people, not markedly gregarious, the opening of great tracts

of interior is in accord with their instincts, and cultivation is but a matter of communication and transport.

The cotton country of Brazil needs expert growers and good roads or rail service; it will not lack the work of the small native farmer.

There is a cotton cloth factory near Pernambuco which is an excellent example of a self-contained industry in Brazil. Situated seven miles outside the mediæval port-city of Olinda, whose narrow cobbled streets are lined with tiled and gabled houses reminiscent of Dutch regimen, the estate covers forty-five square miles of pasture and woodland besides the area directly occupied by the works and the village of employees; one edge borders on the sea, fringed with coconuts, and there are two little ports where native *barcaças* bring their loads of raw cotton and merchandise, at the mouths of two rivers flowing through the estate.

Here, on the warm coast of the northern promontory with its tropic vegetation and mestizo population, a Brazilian company started a factory for spinning and weaving; it was not a marked success until Herman Lundgren, an energetic man of Swedish birth, resident in Brazil since 1866 and later a naturalized Brazilian, took over the management of the property. He made an arrangement by which the original owners were paid ten per cent on their investment, all farther profits belonging to himself, and later on bought out the old stockholders; new machinery was brought from Great Britain, technical workers imported from Manchester, and the scope of the business enlarged so that today all processes for producing fine coloured cotton cloths are performed

on the estate—spinning, weaving, dyeing and colour-printing. When the writer visited the factory in the early part of 1915 a shortage of dyestuffs was predicted and I understand that since that time experiments have been successfully made with native vegetable dyes, too long abandoned for the convenient aniline varieties.

The factory employs three thousand five hundred people, of whom seventy per cent are women and children; the total population in the village is fifteen thousand. Over thirty-five thousand dollars a month is paid in wages. The manager of the mills, an Englishman, spoke highly of the Brazilian operatives: the company has never taken any measures to import other labour than that of the district; the majority of the workmen's dwellings are built and owned by the company, and are rented out cheaply, while in some cases these modest cottages of sun-dried brick, thatched with palm or covered with a zinc or tile roof, have been erected by the workmen themselves, their only obligation to the company being the payment of ground rent of two to four milreis a month, the palm-thatched house paying the lowest and the zinc-roofed the highest rate. The company maintains a school, hospital and dispensary, free, for the villagers.

Apart from the mills the estate contains a dairy and stock farm—where some well-known English horses occupy stables, apparently unperturbed by their transference to Brazilian tropics—tile and brick factories, a bakery, blacksmith's shop, and lumber yard. The company uses one thousand tons of coal a month when it can be obtained, but curtailment of imports since the outbreak of the European War has entailed a greater

use of wood fuel. This is cut from the *matto* on the estate, typical Brazilian woodland of great beauty, containing a marked variety of different trees, but notable for its absence of animal life with the exception of insects and some fine butterflies in the neighbourhood of streams and pools.

The estate produces no cotton, purchasing all of this raw material from Pernambuco and Parahyba; one hundred and fifty bags weighing seventy-five kilos each are used daily, and the monthly bill for cotton amounted to £35,000 or £40,000 even when the price of Brazilian cotton was down to about eleven milreis an arroba (fifteen kilos), equal at the rate of exchange then prevailing to about eight cents a pound United States currency; but towards the end of 1915 native cotton rose in Brazil to twenty-five and thirty cents a pound in consequence of the drought in the North followed by crop failures, and factories all over the country suffered from the shortage.

Pernambuco and other northern factories had an advantage in being nearer sources of supply, the difference in freight enabling these mills to get raw material at a rate at least twenty per cent below that paid by the importers of Rio and S. Paulo. From forty thousand pounds to fifty thousand pounds a year is spent by the factory on drugs, colours and chemicals.

Production of cotton cloth averages one million, five hundred thousand metres a month, woven on nine hundred and sixty looms; the cloth measures twenty-two to twenty-six inches in width and has an immense variety, from heavy blue denim to fine flowered fabrics woven or printed in brilliant colours, beloved by Brazilian working classes. Trains of mules pass daily along the road from

the factory, each animal carrying two bales of cotton cloth weighing seventy-five kilos each; the whole of this output is sold in Brazil, distributed over half a score of different States by shops established by the company. There are over eighty of these stores, selling cloth and also ready made garments of simple make, in Pernambuco State alone, as well as others in Bahia, Ceará, Parahyba, Rio, S. Paulo, Matto Grosso, etc.

HERVA MATTE

Herva matte, sometimes called "Paraguay tea," is the leaf of a small tree belonging to the *ilex* family. It is, botanically, *ilex paraguayensis*, and has much the appearance of a small, particularly dense live-oak. It grows wild, and very thickly, in the south Brazilian State of Paraná, the forests straying out into Matto Grosso, São Paulo, Santa Catharina, Rio Grande do Sul, and over the borders of the Argentine; but Paraná is the great home of the little tree and of the manufacture of the leaf into a commercial product. Its preferred habitat is from 1500 to 2000 feet above sea level, and until recently it had never been cultivated successfully except by the early Jesuit missionaries; but now Argentina announces her intention of fostering plantations of matte, and the Brazilian exporters are more alarmed than were the rubber shippers of the Amazon when they first heard of Wickham's experiments.

Prepared in Brazil, matte has little sale in that country; only the states of the southern border have learned to drink the infusion. Buyers and users of the leaf are, first, Argentinos and next Paraguayanos, with several other South American countries taking smaller quan-

tities; the confirmed matte drinker rejects Indian teas and coffee with contempt, and there is undoubtedly much to be said for this herb. It is tonic, is not accused of possessing nerve-attacking properties to the same extent as tea or coffee, and has a delicate flavour: it has a good opportunity to prove its qualities in world markets, now that a society has been formed in Paraná to defend and advertise it. In the Argentine stock-raising districts every *gaucho* has his apparatus for making the infusion, and is said to be able to work all day on this drink and a little bread.

The leaves are gathered for three or four months in the year, May or June until August; carried to a central hearth, they are dried over fires, packed in bags and sent on mule-back to Ponta Grossa or Curityba, and there carefully prepared for export. Mills and sieves of Brazilian invention reduce the dried leaves to powder, divide it into qualities according to the fineness of the reduction, and pack for export; Paranaguá is *the* matte port. Thousands of colonists and isolated dwellers of interior Paraná depend upon matte for the basis of their living; the *hervaes* (matte forests) are often seen together with the fantastic Paraná pine, a thick green growth below the tall stems of this other tree characteristic of the landscape of southern Brazil. The Paraná pine, besides its value as a yielder of excellent lumber, is noted for its product of pine kernels so large that they often exceed good-sized chestnuts in bulk. They are to be seen in huge sacks on sale in all the markets of South Brazil, are boiled like chestnuts and form a nutritious and excellent food. They should be better known, but their use seems to be largely confined to the Italian population, who have always had a predilection for pine

kernels: when the Romans invaded Britain they brought and planted pine trees of the nut-yielding variety.

Each *matte herval* is invaded in the picking season by local gatherers; the central fire is started, the trees stripped of small branches; care is taken to prune them so that succeeding yields are not injured; there is not a great variety of shrubs in the vicinity of the *matte* forests, and not much cleaning has to be done. Brought down to the ports, the cost of prepared *matte* rarely exceeds six cents: including freight and other costs it could be placed upon North American markets as it is in European, at about eighteen to twenty cents a pound in normal times.

During the year 1915 Brazil exported her highest record of *matte* to date, 75,800 tons, but left this figure far behind in 1919 and 1920, with over 90,000 tons. This was not such a good price as that of 1913, when sixty-five thousand tons fetched 21,000 contos, at an average price of five hundred and forty-two reis per kilo. The amount exported has gone up steadily since the beginning of the century, when thirty-five to forty thousand tons was a fair total.

Argentina, the most important buyer of the "yerba," has for some years imposed certain restrictions upon the entry of Brazilian *matte*, insisting, as she is right to insist, on guarantees and proofs of its purity: Brazil has conformed with wishes of the Argentine authorities. In April, 1915, the customs-houses of Buenos Aires were circularized by the Argentine Minister of Finance, requesting tests which would have meant the opening and submitting to chemical analysis of each package of

matte. Compliance meant a very large addition to costs, as each separate analysis meant an expenditure of at least ten Argentine pesos, or about four dollars; as a result importation ceased and orders were countermanded. A month later restrictions were modified, but one analysis of each consignment being obligatory; at the same time even more rigid measures were taken to ensure the entry of nothing but unmixed leaves, the Argentine Counsel of Hygiene urging the Government not to admit any matte which did not contain at least seven per thousand of *mateina* or *cafeina*.

No such rules, meanwhile, have been imposed upon matte of Argentine origin or milling; the product of the home mills is not free from suspicion of adulteration with other herbs, and the *Revista de Economia y Finanzas* of Buenos Aires (July, 1916) wrote scathingly of the law which "imposes analysis upon the foreign product, with the preservation of public health as object, while the product of our mills, uninspected, may endanger it." The root of the Argentine obstacle really seems to be a new project for planting the tree on an extensive scale in the territory of Misiones, bordering on the south Brazilian, matte-producing, states; the plan includes plantation of thirty thousand hectares of land and the construction of a railway line. If success crowns this enterprise Brazil will not immediately be forced to search for other consumers of the product of her two hundred thousand square kilometers of matte forests, but in the course of a few years she might find her industry seriously threatened. If the society which has taken up matte defence and advertisement is only half as successful as that specializing in Brazilian coffee propaganda, matte will find good markets north of the

equator should those below it fail her. The following is the analysis of matte, compared with green tea, black tea, and coffee:—

In 1000 parts.

	<i>Green Tea</i>	<i>Black Tea</i>	<i>Coffee</i>	<i>Matte</i>
Essential oil.....	7.90....	6.00....	0.41....	0.01
Chlorophyll.....	22.20....	18.14....	13.66....	62.00
Resin.....	22.20....	36.40....	13.66....	20.69
Tannin.....	178.00....	128.80....	16.39....	12.28
Theine or caffeine .	4.30....	4.60....	2.66....	2.50
Fibre & cellulose ..	175.80....	283.20....	174.83....	180.00
Ash.....	85.60....	54.40....	25.61....	38.10
Extract and colour- ing matter.....	464.00....	390.00....	270.67....	238.83
	960.00....	921.54....	517.89....	554.41

Out of her total exports in 1915 of nearly seventy-six thousand tons, Brazil sent over fifty-eight thousand to Argentina, fourteen thousand to Uruguay, and three thousand tons to Chile. In 1920, seventy thousand tons were sold to the Argentine, eighteen thousand tons to Uruguay, and rather more than three thousand to Chile, where sales of Oriental teas compete with the matte leaf.

SUGAR

Sugar production is one of the Brazilian industries which have waxed, waned, and with the encouragement of high market prices abroad, has recently again forged ahead. As in the case of cotton, sugar can be and is grown in the great majority of Brazilian states, from the mouth of the Amazon down to the Laguna Mirim, but there are areas, chiefly on the central littoral, where

soil and climate are so well suited to sugar-cane that production from these regions is able to compete with other world offerings. There was a time when Brazil was the chief source of sugar supplies to Europe, but the industry suffered two great blows—one, the stimulation of cane-growing in the British West Indies, and again the abolition of slavery in Brazil in 1888, which resulted in many instances in the abandonment of the plantations by a large part of the negro population, crowding into the coast cities to enjoy new liberty.

Cane production has all the advantages of an ancient industry whose details have long been reduced to an exact science. Its recorded history goes back to the fifth century, so that we can reckon that there have been fourteen centuries of experiment in cane culture. A native of Bengal, sugar was in cultivation in the fifth century along the valleys of the Tigris and the Euphrates; the conquering Moors took it into Spain in the eighth century, and during the following six or seven centuries its cultivation on a limited scale proceeded on the shores of the Mediterranean. In the fifteenth century when Portugal re-found and colonized Madeira and the Azores, sugar-cane was introduced into these islands, flourished there, and yielded sugar to the home market in Lisbon. That it was an exotic luxury in Europe generally is proved by its price: a hundred-weight sold in London in 1842 fetched £55. Twenty-five years later the price had dropped to ten pounds for a like quantity, but by that time larger supplies were coming in. After the discovery of the West Indian Islands by Columbus cane was introduced into Hispaniola and Cuba by the Spanish settlers, but cultivation was strongly discouraged by the home

government, who chiefly aimed at the stimulation of gold-mining. Brazil, whose gold-deposits were luckily not discovered until the seventeenth century, became in contrast to New Spain an agricultural country from the time when the first *capitanias* were allotted: she began shipping sugar in the visiting Portuguese caravels in a few years after first settlement.

Thenceforth for over a century and a quarter Brazil became the main source of sugar supplies to Europe; when placer gold and diamond-bearing gravels were found by the *bandeirantes* everyone rushed to the General Mines taking slaves along, until the coast plantations were denuded both of masters and labourers. Consequent languishing of sugar production made it worth while for both England and France to develop cane growing in the West Indian isles which they had seized from Spain. It was in 1662 that the British "Company of Royal Adventurers of Africa" agreed to deliver three thousand slaves a year to the British West Indies, and sugar production in Jamaica, Barbados, etc., began to attract wealthy planters: whole fleets of high-prowed sailing ships came into Caribbean waters to take away sugar, rum and molasses in those palmy days, enduring until Napoleon started the beet-sugar industry and Great Britain, not long after, abolished the slave trade.

Europe only discovered her possession of a sweet tooth during the sixteenth and seventeenth centuries. Before the great production of sugar from the New World began to be carried to Spain and Portugal, and by them distributed at high prices and in small quantities to the rest of Europe, the only sweetening known to the masses of the population was honey, and this was

a luxury. There was no taste for sweets until sweets became common. The real taste of the Middle Ages was for spices; it is not generally realized today to what extent the food of Europe was at this period saturated with cloves, nutmeg, cinnamon and other spices brought from the Orient. It was for the "Spice Isles" that the early navigators searched the wide seas, spices that they ate with a gusto almost incomprehensible today: they flavoured their beverages and scented their clothes with spices.

The most flourishing centres of sugar production in Brazil are in the State of Rio de Janeiro, where Campos is the focus of sugar deliveries, and Pernambuco, a thousand miles farther north; São Paulo has also an increasing sugar industry, as may be seen from the following list of large sugar mills; small factories, of which there are hundreds in Brazil chiefly turning out *rapadura*, a brown sugar-brick, and *cachaça*, the native rum, are not included:—

Alagoas.....	9
Bahia.....	7
Maranhão.....	3
Minas Geraes.....	7
Parahyba do Norte	2
Pernambuco.....	46
Rio de Janeiro.....	31
Santa Catharina.....	2
São Paulo.....	20
Sergipe.....	15
Piauhý.....	1
Rio Grande do Norte....	3

On almost every cotton, coffee, tobacco or other *fazenda* in Brazil, besides those given over to sugar production, one finds patches of the bright veridian green that demonstrates the presence of sugar, grown and milled for home uses; altogether the production of sugar in Brazil must be much larger than is shown by any statistics, and there does not exist any comprehensive estimate of the total amount. A few years ago the charge could be made that Brazilian sugar-milling methods were antiquated, extraction low because the machinery employed was inferior: but whoever repeats this tale today has not seen any of the huge, scientifically managed estates and mills of Pernambuco, the *usinas* of the country about Campos, where the sky-line is punctuated by slim chimneys, or any of the fine modern equipments of São Paulo. One of the first good mills that the writer saw in Brazil was at Piracicaba, in the interior of São Paulo, where an excellent product was marketed by the employment of thoroughly up-to-date methods. Here the installation of machinery is European, chiefly French, but there has been an increasing tendency since the outbreak of war in Europe towards purchases of American equipment, perhaps especially among the *usinas* of the northern promontory.

Exports of sugar from Brazil have fluctuated in an extraordinary manner since the beginning of this century; swift drops in amounts sent abroad have nearly always spelt "drought," but there seems to have been a general tendency to decline until the stimulation of war prices helped the industry, due partly to formidable competition from the Caribbean islands and coasts, and partly to increased consumption in Brazil. A marked

feature of the Brazilian sugar export lists is a developing sale to Argentina; it has been recently stimulated by the failure of Argentine supplies, but is also part of the symptomatic increase of interchange between the commercial South American countries. Brazilian sugar exports, shipped in bags of sixty kilos weight, 1906 to 1920 in round numbers:—

1906.....	85,000 tons
1907.....	13,000 “
1908.....	32,000 “
1909.....	68,000 “
1910.....	59,000 “
1911.....	36,000 “
1912.....	4,800 “
1913.....	5,400 “
1914.....	32,000 “
1915.....	59,000 “
1916.....	54,000,000 “
1917.....	138,000,000 “
1918.....	116,000,000 “
1919.....	69,000,000 “
1920.....	109,000,000 “

The price has ranged during this period from two hundred and twenty-five reis per kilo paid for the short crop of 1904, down to one hundred and eight reis paid in 1906 when the crop was large; from that low point it climbed upwards, fluctuating about one hundred and sixty to one hundred and eighty reis from 1907 to 1913, fixed exchange making this price the equivalent of about three and a half to four cents a kilo, or something like a cent and a quarter to a cent and three-quarters per pound. In 1914, with war prices encouraging the

sugar market, the price rose to two hundred and twelve reis a kilo, and in 1915 to two hundred and forty-four reis, a figure exceeded enormously in the post-war boom of 1919-20.

The average yield of sugar-cane per hectare in Rio de Janeiro and São Paulo is fifty tons, or let us say something over twenty tons an acre; this does not compare with Caribbean coast yields, where eighty or ninety tons an acre is obtained from lands impregnated with volcanic ash, and fields are to be seen which have not been re-planted for a dozen years. Brazilian soils, chiefly composed of drifts of disintegrated granite, oxidized by the sun to a brilliant red tint, are sometimes very rich, but also are frequently just good honest soils that cannot stand abuse without exhaustion following; with proper rotation of crops these lands will yield generously, but it is scarcely surprising that, in regions where sugar has been almost continuously cultivated for a couple of centuries, the cane crop per acre is comparatively low.

Pernambuco, for instance, counts her cane cultivation from the year 1534, when the first *engenho* (sugar mill), piously named *Nossa Senhora de Ajuda*, was established near the settlement at Olinda.

Brazilians are large consumers of sugar; the internal consumption has been calculated at three hundred thousand tons a year, or some eighty to ninety pounds a head of the population, and, with the exception of fine sweets imported, chiefly from France, all of the sugar used in Brazil is nationally produced. The sugar growing and refining industry is in an exceedingly healthy condition, is one of the important national resources,



Carioca Cotton Mill, Rio de Janeiro.
Catende Sugar Mill, Pernambuco.

and has shown marked revival during the last two years.

TOBACCO

The use of tobacco in Brazil dates back an unknown number of centuries: the natives smoked the leaf, both in the form of rolled cigars and also in small quantities in wooden pipes, made in the fashion which Europe subsequently adopted. The first European to make any record of this habit was that painstaking Frenchman, André Thevet, who came to Rio de Janeiro with Villegaignon's unfortunate expedition in November, 1555; he says that the native name for the plant was "betun" or "petum," and the drawing in his book (*La Cosmographie Universelle*) identifies it with *Nicotiana tabacum*. In the Amazonian regions both men and women smoked tobacco as a recognized form of enjoyment, and its effects were so much appreciated by another traveller, Piso, that he declared it to be one of the three American plants which had no equal in the Old World for beneficial uses—coca, tobacco, and the root of mandioca. Tobacco-smoking by American natives had first been noticed by the crew of Columbus in 1492.

During the latter half of the sixteenth century Europeans began to take to the use of tobacco, the Spanish colonies sending it home from the West Indian Islands and the Portuguese from Brazil; it was not until about 1600 that it was seriously cultivated for export in the Brazilian *capitanias*, and when experiments were made with this object it was found that Bahia yielded the best product, although that of Pernambuco was also

good, and the plant produced freely all along the littoral, from Amazonas to the lagoons of Rio Grande do Sul. Tobacco became during colonial days one of the important exports of Brazil, together with dye-woods and sugar.

Brazil marks her extensive cultivation of tobacco from about 1850, after her ports had been thrown open to world commerce and the flags of all lands were seen in her ports. In 1860 she exported 4,609 tons; in 1870, 13,276 tons and in 1873, nearly 17,000 tons, of which over 14,500 tons came from Bahia. By the year 1886 Brazilian exportation had risen to 23,000 tons, the value was over 15,000,000 francs (or more than \$3,000,000) and a part of this to the value of 3,500,000 francs, "was returned to us made up into so-called Havana cigars," remarks Almeida. "It was not fashionable to smoke any tobacco or cigars other than of the Havana kind in Brazil fifteen years ago."

Now ideas have changed: Brazil realizes the value of her own product, and Bahia has no hesitation in challenging Vuelta Abajo to a comparison. Soils of the two regions are similar in qualities. Father north, the Brazilian *fumo* has a stronger, less delicate flavour, and is largely consumed at home; cigarettes of Pará, Amazonas, Parahyba, Pernambuco, Matto Grosso, Minas, and many other states are manufactured in large quantities, and sold cheaply; very good Pará cigarettes made of the black local tobacco sell at ten for a "tostão"—a fraction over two cents.

By the end of the century Brazilian tobacco production had grown to some forty thousand tons, largely the result of ready markets in Germany, which practically absorbed the whole of this export until the out-

break of the European War, and the adoption of North American seeds and methods of cultivation. The output suffers fluctuations due to climatic conditions, as will be seen from inspection of the following figures; it will be noticed that prices have on the whole a tendency to rise: ‘

<i>Year</i>	<i>Tons</i>	<i>Total Value in Gold Milreis</i>	<i>Price per Kilo in Paper Milreis</i>
1905.....	20,390.....	7,335 contos	636 reis
1910.....	34,149.....	14,453 “	714 “
1915.....	27,096.....	10,328 “	835 “
1920.....	30,561		1200 “

In calculating prices it is well to bear in mind that the gold milreis is always worth twenty-seven English pence, while, although fixed between 1906 and 1914 at sixteen pence, the value of the paper milreis fluctuates. During 1915 it was worth an average of a fraction over twelve pence, so that the price of tobacco—eight hundred and thirty-five reis a kilo—may be considered as about eighteen cents a kilo, or a little over seven American cents per pound. While, as we have seen, thirty thousand tons of tobacco is exported each year from Brazil, enough remains in the country to supply ninety-six per cent of the internal consumption; cigars, tobacco and cigarettes are consumed in the country to the value of 40,622 contos, importations being worth only 1,500 contos of this amount.

Every state in Brazil has its large or small tobacco factories, but the great manufacturing region is that of São Felix, just across the bay from São Salvador (Bahia) city. Accessible to the factories established here are

the finest tobacco regions: the product is excellent in flavour and well prepared for a discriminating market. Organizers of the manufacturing industry, as well as shippers to Europe, are largely German; German also is the big cigar factory of the South, that of Pooock in Rio Grande do Sul, whose product goes all over Brazil.

Since the beginning of the European War the absence of German and Austrian shipping movement has paralyzed tobacco sales, and as this item forms about thirty per cent of Bahia's exports it was necessary to seek unimpeded sales channels. Negotiations were opened with the *Regie Française*, the great French tobacco-buying organization, and the packing, quality, fermentation and other conditions studied with reference to sales.

CEREALS

Wheat growing is only possible on a commercial scale in the south of Brazil where temperature and climate are not unlike those of the European lands of origin of this cereal. At present Rio Grande is the only great wheat producing state, although Paraná has a budding industry; the great Italian firm of Matarazzo has recently acquired large areas of land in that state with the object of growing wheat and establishing a flour mill.

Rio Grande, which owes the major part of its opening-up to the German settlers who emigrated there about the middle of the nineteenth century, already grows half enough wheat to satisfy the internal needs of the State, for although she still imports 361,000 barrels of flour, and 236,000 bushels of wheat (equal to another

47,000 barrels) yet she also grows enough wheat to yield 407,000 barrels of native flour. She has, it is calculated, over 83,000 hectares of land under wheat, employs 29,000 field hands, and has over a thousand grain mills. Many of these are equipped with out-of-date machinery, and are small, but there are others fitted with good modern systems producing fine flour.

Two of the best wheat producing municipalities are Alfredo Chaves and Caxias, each of which have over four thousand hectares under wheat and produce an average of six thousand tons of this grain; the first municipality has fifty-one and the second sixty-seven mills. To show the "rio-grandense" growth in wheat production:

1909.....	15,250 tons
1910.....	31,267 "
1912.....	52,332 "
1915.....	55,000 "

Santa Catharina is a cereal State, but does not today produce notable quantities; São Paulo, the high interior of Rio de Janeiro, and the hills of Minas, are all suitable; fine wheat, barley and oats are often seen in the vicinity of European colonies. But Brazilian production is not yet within measurable distance of coping with internal demands, and as a result wheat, with wheat-flour, accounts for one-fifth of Brazil's total import values. The bulk of the grain imported comes from the River Plate.

Linked with the agricultural production of cereals is the flour-milling industry, which dates from the time when wheat entered Brazil free of duty while wheat-flour paid thirty reis a kilo: this was the condition of

the tariff until December, 1899, by which time two large mills had been established in Rio de Janeiro. In January of the following year imported wheat was taxed for the first time, ten reis a kilo, while the duty on flour was reduced to twenty-five reis; national milling profits suffered correspondingly.

In 1906 other alterations were made in the tariff as regards flour from the United States, in addition to certain manufactured articles; it was suggested to Brazil that the United States was a good customer for Paulista coffee and Amazonian rubber, and that she expected "most favoured nation" treatment in return: a tax of three American cents per kilo against coffee was indicated as a short way with objectors. Brazil yielded, giving the United States a twenty per cent reduction on flour import duties, as well as for condensed milk, manufactures of rubber, clocks, dyes, varnishes, typewriters, ice-boxes, pianos, scales and wind-mills. Four years later the preferential tariff was extended to dried fruit, cement, school and office furniture, and in 1911 the rebate on flour entries was changed to thirty per cent.

As a result American sales of the goods indicated have increased very largely, although sales of rubber and coffee have remained, on Brazil's part, about the same for the last seven or eight years; her more markedly larger shipments to North America are cacao and hides. But American flour imports into Brazil have increased from a little over twenty-four thousand tons in 1906 to nearly sixty thousand tons in 1920, with rises in other articles equally pleasant for the northern manufacturer—cement sales, for instance, increased from one hundred and twenty tons in 1908 to over

76,000 tons in 1920; but in 1921 Germany, selling 30% below her rivals, captured this trade. Reduction of taxes on American flour is actively opposed from two points; the first is the group of flour mills operating in the country, and the second in the sister republic of Argentina who also has flour to sell.

The flour mills in Brazil of commercial importance are eleven in number: the Moinho Fluminense and the Rio de Janeiro Flour Mills, in the city of Rio; Moinho Santa Cruz, across the bay in Nictheroy; Grandes Moinhos Gambas and Moinho Matarazzo, in São Paulo city; Moinho Santista, in Santos; there are three modern mills in Rio Grande State, at Pelotas, Porto Alegre, and Rio Grande City; Paraná has two, at Paranaguá and Antonia.¹

The great cereal of Brazil is that wonderful plant developed by the aborigines of the Americas, maize: it is commonly known as *milho* in Brazil. Only recently has the wild plant, mother of all the different kinds of maize in the world, been identified—a proof of the long culture which brought it to the perfection which the first European conquerors encountered; yet such was the hardihood of this cereal that thirty years after the Conquest it had spread all over the warm parts of Europe and was thriving in Africa and Asia.

¹In 1915 Brazil imported 805,000 barrels of American flour, 56% of the total and 605,000 barrels from the Argentine, or 41%, the remaining 4% coming from Uruguay; at the same time she imported 14,000,000 bushels of wheat, of which nearly 12,000,000 came from Argentina and about 2,000,000 from the United States. This wheat, at five bushels to the barrel, made another 2,750,000 barrels of flour, and the total Brazilian consumption may be reckoned at about 4,200,000 barrels of wheat-flour of foreign, plus 407,000 of native, origin. The c. i. f. price of United States flour in Brazil in 1915 averaged \$7.49 a barrel, while Argentine was able to deliver hers, c. i. f., for \$5.28.

It is, with mandioca, the great food of all South and Central America and Mexico, grows under almost any conditions, apparently, and while the seed is seldom carefully selected, strongly marked varieties of prolific habit are found in Brazil, the red, white and yellow all yielding well. It is found in patches outside every little hut, and in enormous fields in Central Brazil. In spite of the large importation of wheat nowadays to satisfy the more luxurious tastes of the cities, Brazil could not live without maize.

Rye is grown by the Russians of the southern colonies, and the south also produces a limited quantity of oats and barley.

FIBRES

Among the fibres of Brazil which are offered extensive markets is the wonderful *paina*, known in European markets as kapok, which is thirty-four times lighter than water and fourteen times lighter than cork. Produced chiefly in the Orient, its qualities were many years ago appreciated by German manufacturers who were until recently the largest purchasers of the fibre, using it for life-belts, mattresses, etc. Today an unsatisfied demand for kapok comes from the *Société Industrielle et Commerciale du Kapok* of Paris and London, which is said to expect enormous calls after the close of the war, when rehabilitated Belgium and northern France will need pillows, mattresses, coverlets, and quantities of other things with the qualities of lightness, warmth, elasticity and impermeability possessed by this renowned fibre. At present world supplies come from Java (best fibre, cleanest, best

packed), British India, an inferior grade, as is also that of Central Africa and Senegal; a few years ago, at the suggestion of Germans interested in Venezuelan railways, the kapok tree was introduced there; but when the cotton was sent to Europe it was rejected on account of its condition "the greater part of the bales containing stones, refuse, etc., which sometimes amounted to thirty per cent of the total weight; thus, in spite of the fine quality of Venezuelan kapok, French importers were obliged to cease purchases,"—a lesson for careless exporters.

Many parts of Brazil display this beautiful tree. When the writer was first in Petropolis, in bright May weather, the avenues of that mountain city were gay with the large bright pink flowers of this grey-trunked, spreading exotic. Later, when the bolls ripen, the fibre is collected, sold by the kilo over many counters throughout the country, and used locally for stuffing pillows and cushions.

The price paid by France for paina fibre is about one hundred and forty to one hundred and sixty francs per hundred kilos of good-grade material: she imposes no duties against its entry. Brazil has many good fibres, but their extensive industrial use is as yet limited to *aramina*, of which coffee bags are made in S. Paulo, a flourishing industry, and the *pita* which is used by the Indians of Amazonas to make hammocks. These are woven with great art, interspersed along the edges with delicate feathers of gay-coloured Amazonian birds.

Fibre production in a scientific manner and on a commercial scale is only in its infancy in Brazil, but has recently shown interesting development. There are numbers of fine fibres native to the country, yielded

not only by a large number of palms, one of which supplies the *piassava* exported for broom-making, but also by many plants of the aloe tribe. Some of these produce fibres equal in commercial value to the famous *henequen* (sisal) of Yucatan, upon which the rope-making industries of the United States so largely depend.

Banana fibre is used by the lace-makers of the north for the production of a curious, stiff, shiny lace of fairly intricate workmanship. The best specimens which I possess of this lace were bought at Maceió, but the great home of the lace-maker is Ceará. She usually works with linen or cotton threads, and is to be seen at every cottage door, with her pillow bristling like those of the Devonshire lace-makers, with scores of pins, while she throws the myriad bobbins to and fro, working her pattern on the pins.

Some of the lace produced is quite beautiful, of extreme fineness and intricacy, some of the most prized being the *labyrintho*, with its darned-in pattern of heavier, silky thread, among the fine filaments of the background. Lace-making is one of the small industries of Brazil which are little known, but deserve a better market.

CACAO

Cacao culture and preparation is the great absorbing industry of southern Bahia, where soil and climate, particularly along a couple of river valleys, combine to render the pretty little cacao tree fruitful. Not even coffee presents a more charming sight than a good cocoa plantation ready for harvest, the sun filtering through

the light branches, and these, as well as the trunk thickly clustered with the big heavy red or yellow pods, looking something like elongated melons attached, almost stemless, to the strongest parts of the tree. Methods in use on many native plantations in Brazil are fairly primitive, and it is the exception to see the elaborate machinery for fermenting, washing, and drying such as is common in Trinidad; but the cacao produced is good, has a ready sale in a market which never seems to have too much cocoa and chocolate, and has made remarkably good prices since the European War began. Bahia is the great producing state, but Maranhão, Amazonas and Pará also send contributions to the export lists; the chief Bahian centres of production are Ilhéos and Itabuna, which send two-thirds of the crop, the rest coming from Cannavieiras and Belmonte primarily. The groves run inland for more than two hundred miles along the river valleys, full of the red triturated paste which is the base of Brazilian soil.

The cacao year is reckoned from May the first to April the thirtieth, and there are two gathering seasons: the *safrá* proper begins in September and goes on until April, while the summer crop, the *temperão*, begins in May and has a less important yield. Practically, picking goes on all the year.

Cacao is native to the Americas, but its first cultivation and export from Bahia appears to date no earlier than about 1834, when there are records of shipments of 447 sacks of sixty kilos each. In 1840 the export was nearly 2,000 sacks, and in 1850 had risen to more than 5,000 sacks. In 1915 Bahia shipped about 750,000 sacks, as a result of the enthusiastic planting which

has gone on in this favourable region for the last twenty years.

Until the war broke out the average price for six years for Brazilian cacao was about 725 reis a kilo—about seven cents a pound. It was at this price that Brazil sold an average of thirty-two thousand tons. In 1915 the price soared to 1\$248 a kilo, or about twelve cents a pound, and Brazil with the biggest crop then on record exported 44,980 tons, a total exceeded in each of the following five years, 1919 showing exports of 93,000 tons, at 1\$500 per kilo.

Cacao is a very good business, because there is seldom a surplus in world markets; a demand exists for every pound, and the populations of great centres seem to consume it in increasing quantities; it is a valuable food, against which as yet no analytical chemist has laid one of the charges that seem designed to warn us from most things that are agreeable to eat and drink.

Anyone accustomed to warm climates, with a little capital to invest, and able and willing to wait three or four years for his first returns, could do worse than to take up cacao planting in Brazil.

Agricultural methods in Brazil are in many regions quite primitive. When wild land is taken up, it is denuded by the axe of its big trees, and the small scrub disposed of by burning the land over. Frequently the next process is little more than that of making holes in the ground with a stick, dropping in seed, and waiting for it to come up: a fertile land, Brazil gets her crops with a minimum of trouble. That is all very well for the little owner of a small property, but it has already given way in more advanced districts to sound agri-

cultural methods. Modern scientific agricultural implements of American and European make are commonly seen in the centre and south, but in the extreme north and the deep interior they are more rare. There is an excellent market for small, light hand ploughs, harrows and cultivators, for in some parts of the country, such as interior Rio, the land in the bottoms of valleys is very good, has been neglected because only coffee, planted on the hill-tops, has pre-occupied the small farmer, but there is not sufficient flat space for the use of large motor or animal operated machinery. A campaign of agricultural instruction has been inaugurated for some years by the Department of Agriculture, some good statistics and maps and literature sent out, but perhaps less theory and more practical instruction is needed. A recent writer in the *Estado de S. Paulo* remarked upon this, rather caustically: “. . . instructions for the culture of squashes—plough the ground with a plough with a disc of such a number, harrow it with such or such a harrow, drill it with such or such a drill; afterwards fertilize it with so many tons of phosphate of lime, so many of potash, and a few kilos of powdered gold; cultivate it with such a cultivator, harvest the crop with such and such methods, and take it to market in a certain kind of motor-truck, et cetera, this ‘etcetera’ meaning that the farmer must hand over his farm to his creditors and go to hunt a job as sanitary inspector. . . .”

Other countries have also suffered from a plethora of agricultural theory, but there is plenty of room for instruction of a practical character and several good agricultural schools in Brazil, notably that at Piracicaba, São Paulo, are leading the way.

BRAZILIAN FRUITS

There are many fine fruits in Brazil, unrecognized abroad, which may some day, with refrigerating spaces in outgoing vessels multiplied, find a way to international tables; there is already a pineapple export to Europe, arriving in time for Christmas, and Brazil's sweet bananas are shipped to the Plate. But who realizes that Brazil is the native home of the finest oranges in the world? Bahia is the place of origin of the seedless orange; slips of this tree, taken to California, have created a tremendous daughter industry whose products are spread far and wide by steamer and train; there is no export from Brazil, the Bahian orange, which is greatly superior in size and flavour to the Californian, hardly creeping down the coast to the markets of Rio and São Paulo. There is room for a huge industry in growing and shipping in this direction, and some of the planters of California, trembling of nights when the frosts come and smudges have to be burnt—sometimes in vain, would do well to transfer their skill and energy to a land where frosts are unknown, land is cheap, and the best oranges known are produced without any great care or science.

MINING

Brazil was for more than a hundred years after the discovery of placer deposits in the interior the source of important gold exports; altogether she is estimated to have yielded gold worth more than a hundred million pounds sterling, but her fame diminished with the exhaustion of the gold-bearing river sands. It was easy

enough to wash out gold grains with the *bateia*, but when it became necessary to seek mother lodes and to use machinery, native capital and technical skill were lacking. Two gold-mining companies are working today in Brazil, both British owned and operated, and both in the State of Minas Geraes. One, at Morro Velho, property of the S. João del Rey Mining Company, is worked at a depth of a mile and a quarter, pays dividends regularly, and is a standing tribute to British energy and skill: it is a magnificent social organization as well as an engineering triumph.

The second company of importance using modern equipment is that of Passagem, close to the old capital of Minas Geraes, Ouro Preto; it is excellently operated, but has not had equal good fortune with the Morro Velho mine. In 1916 Brazil's gold exports, in bars, weighed 4,564,523 grams, were worth about £480,000, and went entirely to England, but Brazil subsequently forbade gold exports, and now takes over all the product.

A certain amount of Brazilian gold is absorbed internally every year by the excellent native goldsmiths, for the fabrication of special jewellery objects, but no estimate of the value is obtainable.

Until diamonds were found in South Africa Brazil was the cradle of the most important diamonds put on foreign markets; the stones are still sought by native *garimpeiros*, mostly, in the interior of Minas and Bahia, and from the *grutas* of the latter State are obtained the finest white diamonds known. But they have practically disappeared from export lists together with the black *carbonados*, even more valuable, for a reason commented upon by the *Diario Official* of Bahia, discussing 1915 trade: "If diamonds and carbonados have been,

since the war, sent to Europe or North America, their exportation, which is for the most part unknown, has been realized by the habitual processes of smuggling." Brazil is the main source of these "carbonados," black diamonds of great hardness and therefore value, used industrially.

The precious stones openly shipped from all Brazil during 1915 were worth only about one hundred and seventy-six contos of reis (say forty-four thousand dollars), of which about fifty-five per cent went to the United States and the rest to France. During 1916 the export of precious and semi-precious Brazilian stones to North America has been greatly stimulated by the access of luxury-purchasing which has coincided with the accumulation of war profits, and out of American purchases of jewels from abroad at the rate of a million dollars a week Brazil has her share. The stones of Brazil have long been appreciated in Europe—I am thinking of a certain shop in the Rue de la Paix in Paris and another at the top of Regent Street in London—and deserve to be better known in North America; the diamonds are beautiful, and their distribution among not only the wealthy but the "middle" classes in Brazil is so usual, the possession of good diamonds is so universally considered the right of every woman, that a gala night at the theatre in São Paulo or Rio is a display of brilliant stones which would put, for choice jewels, many capitals of the world to shame.

The lovely sea-blue *agua-marinhas*, with exquisite transparency and lustre, the soft green *tourmalinas*, the pink and golden topazes and purple amethysts are all found in great quantities in the Brazilian interior: many are native cut, and the wheel of the lapidary using

beautiful coloured stones may be seen at work in Bello Horizonte, Rio, Bahia, and São Paulo.

If half that geologists have said of Brazil is true, this country is destined to become one of the greatest mining regions of the Americas; it has an extraordinary variety of minerals, but their location in the interior where little transportation exists, added to the restraining influences of archaic mining laws, has checked enterprise. Before the European War began plans were well under way for development of important iron mines in Minas Geraes by an English company, but work is in abeyance at present. There has been, however, a marked increase in exports of high-grade manganese, chiefly from Minas, chiefly shipped away in the newly operating line of freight steamers owned by the United States Steel Corporation, which bring manufactured products to Brazil. Out of the total of more than three hundred thousand tons of this ore exported from Brazil in 1915, over two hundred and sixty-six thousand tons were sent to the United States, the price paid being over two and a half million dollars; Great Britain also took ten thousand tons, but Germany and Belgium, former customers for this ore, were eliminated from the lists.

During 1916 production, mainly from Minas deposits, rose to over five hundred thousand tons, again increasing to five hundred and thirty-three thousand tons in 1917; after this time depression was experienced, due in great measure to lessened demands from the United States using home-produced low-grade ores for steel hardening. Post-war prospects of development of the great Itabira iron deposits suggest iron and steel industries within Brazil.

Large manganese deposits also occur in the neighbourhood of Nazareth, on the mainland side of the Bahia de Todos os Santos (Bahia State), situated conveniently for shipment; its export was reduced to practically nothing from this point during 1914 and 1915, probably for the same reason that shipments of another famous Brazilian mineral, monazite sand, vanished about the same time from Bahian lists. This reason was the imposition of strangulating export taxes, amounting to about twenty-two per cent of the value of the mineral. Manganese deposits are known to exist, in addition to the beds in Bahia and Minas, in Matto Grosso, Santa Catharina, Paraná and Amazonas; the total quantity available is estimated at one hundred million tons.

Monazite sands lie all along the southerly shores of Bahia, extending into Espirito Santo; their peculiar glow and lustre was first noticed by an Englishman, John Gordon, who had samples examined and found that they contained thorium, used in making incandescent gas mantles; he was in the shipping business in Brazil, and had no difficulty in thenceforth sending large quantities of the precious sands abroad, as ballast; the story goes that only by an accident was the fact revealed to the authorities that the sands were valuable above the ballast of most vessels, after some years. Duties were put on, and eventually exports slumped. The largest amount officially sent abroad in one year was 2,114 tons, 1908, with a value of 609 contos of reis. In 1915 only 439 tons were exported, all to the United States.

These three meagre items, precious stones, manganese and monazite sands, complete the 1915 official mining exports of a great mineral country. Probably increases

will be shown for the year 1916, for, in addition to manganese increases, there has been great stimulation of coal mining in the States of Rio Grande do Sul, Santa Catharina and Paraná. More than one Brazilian railway, exasperated at the prices demanded for foreign coal, has been using native coal and helping in its production, and during the latter part of 1916 experimental shipments were made to the Argentine. Results are said to be good, but a little caution must be used before serious claims are made concerning the existence of very extensive deposits of fine hard steam coal. In any case the production of useful coal is a blessing to the east coast of South America, devoid as this region has been up to the present of any source of reliable *carvão de pedra*; every ton has been imported, chiefly from Wales but latterly from North America. Chile, on the other side of the Andes, has been mining coal for years, but the quality is not satisfactory for all purposes, and supplies have been supplemented from Australia in normal times.

Brazil has, it is known, important deposits of nickel, copper, lead, mica, platinum, wolfram, and many other minerals, but there has been no real attempt at operations, and until prospecting is systematically undertaken and money put into good equipment, Brazil cannot take her place as a great mineral producing country. She has the minerals, but she needs roads to get them out, and favourable laws to encourage mining development, as well as abolition of strangulating taxes. With intelligent assistance, Brazil's manganese should be able at the close of the European War to compete with that of Russia, and her monazite with that of Travancore (India), aside from the other rich deposits.

BRAZILIAN MANUFACTURES

There is much controversy in Brazil on the subject of national manufactures. I have heard extremists declare roundly that Brazil ought not to manufacture anything at all, because each mill-hand is one more person taken away from the fields to which all Brazilian attention should be given.

"Brazil is an agricultural country," a cotton planter said to the writer. "She cannot legitimately compete with the manufactured products of great industrial countries because the price of living is too high here. To obtain large revenues from the import taxes which are the Federal Government's source of support we have heavy duties against large classes of goods entering the country; the barrier has been so high that it has been worth while for factories to be started here, sometimes making things from material produced in the country, which is not bad policy when we have enough labour, but often making goods every separate item of which is imported, an absurdity."

He went on to say that there is a considerable manufacture of matches in Brazil, but that the igniting chemicals, the little sticks, and the boxes were all imported; nothing was done but the mere putting together. "It is only remunerative because the tax on imported matches is so high, and in many districts owing to want of communication the match factory has a monopoly of local trade—a purely artificial condition." This fazendeiro was equally opposed to the silk and velvet factories of Petropolis, declaring that "every item, raw silk, colours, machinery, even the skilled weavers, are imported" and that until Brazil produces national



Coffee-loading equipment at the port of Santos, State of São Paulo.

Sugar lands in Pernambuco.

silk—a beginning has been made—she should not have silk factories.

This view was that of the agriculturist who sees a menace to labour supplies in the growing manufactures of Brazil: I give it for what it is worth, as an interesting view point with force in some of the argument. But there are industries in Brazil which the agriculturist will admit to be legitimate in themselves and helpful to himself in that they tend to raise prices for his raw products. Of this class the most shining example is the list of cotton-mills. They are already so active that the national supply of raw cotton is not sufficient for their needs, demand being so acute in 1919 that the price in Brazil rose to forty cents a pound. The output is sold in Brazil, supplying over eighty per cent of the fabrics used, with a surplus for export since 1918.

It is not generally recognized to what extent Brazilian manufactures have developed. The great industrial region is Rio de Janeiro. Her industrial advance has been made possible in this direction, as in agriculture, by the influx of sturdy Italians, Portuguese and Spanish workers.

At the same time the manufacturing section is not confined to S. Paulo; it is notably active in Minas and Rio, especially where electric power derived from waterfalls is employed, and in Bahia and Pernambuco where tobacco and sugar create legitimate home industries, and where there is a sufficiency of native and negro labour, the latter an inheritance from slavery days.

The total value of the products of Brazilian fac-

tories is about 2,000,000 contos of reis, equal at twelve pence exchange to £100,000,000 or in U. S. currency, \$500,000,000 *mais ou menos*. This is a larger sum than the value of Brazil's exported agricultural and forestal products, which was about 1,811,000 contos in 1919, and 1,464,000 contos in 1920.

This calculation, however, is not quite fair because it does not take into consideration the agricultural produce consumed in the country; there are no figures available on this subject.

In a review of commerce published in May, 1916, the *Jornal do Commercio* said that out of the ninety-four classes of Brazilian manufacture, eighty were free from internal taxes (the "imposto do consumo") while fourteen were subject to tax, as well as to foreign competition.

It was demonstrated that in these fourteen classes Brazilian manufactures fell below fifty per cent of the total consumption in only one instance, that of pharmaceutical specialties. The most important items are these, in round numbers:

	<i>Brazilian-made</i>	<i>Imported</i>
Woven fabrics (chiefly cotton, but some silk and wool).	450,000 contos.	47,300 contos. .82
Beverages (mineral waters, beer, wine, spirits).	101,300 contos.	47,640 contos. .68
Footwear (leather shoes and boots, and <i>alpagentas</i>).	150,225 contos.	2,425 contos. .97
Prepared tobacco, cigarettes and cigars.	39,000 contos.	1,565 contos. .96
Hats.	29,000 contos.	3,800 contos. .86
Matches.	18,000 contos.	4 contos. .99.9
Conserves.	13,300 contos.	9,800 contos. .58
Pharmaceutical specialties.	11,700 contos.	15,780 contos. .43

In 1921 the number of home-made goods paying imposts rose to 21, and the value to well over one million contos, and includes, besides those detailed above, vinegar, walking sticks, salt, candles, perfumeries (of which Brazil makes sixty per cent of the consumption) and playing-cards.

Among the large class of manufactures free from internal taxes are the important items of cotton thread, jute products (rope, cord and coffee bags) the products of ironworks, potteries, furniture factories; goldsmiths and jewel-workers, soap makers, paper and paper-bag factories, biscuit and bottle, shirt, mirror, trunk, ink, pipe, pin, and window-glass makers; but all of these pay a contribution to their State or municipality or both, appearing in revenue lists under "*Industrias e Profissões*."

In the city of São Paulo this tax upon industries and professions, the latter list embracing bankers, lawyers, barbers, shoe-shiners, hotel-keepers, doctors, newspaper sellers and so on with true democratic impartiality, brings in over forty per cent of the municipal income; it is now worth some three thousand five hundred contos a year, or let us say nine hundred thousand dollars, the cotton factories paying the biggest item, twelve thousand dollars, while shoe factories, jute mills, potteries, jewellers, furniture makers and metal works each pay about eight thousand dollars.

It is plain that manufacturers do not have things all their own way in Brazil, and must be prepared for fairly heavy taxes, but one does not hear the same complaints about petty taxation for every trifle as in the Argentine; on the other hand, the mill owner has not to face cut-throat competition as in older manu-

facturing countries, is able to get an excellent price for his products, is able to buy land at inexpensive rates and to obtain comparatively cheap labour. As soon as a district becomes thickly sown with factory chimneys prices of land and labour automatically rise, of course; this natural law has operated already in the now densely populated and built over suburbs of São Paulo, Braz and Moóca, and is, under one's eyes, transforming the windy upland flats of Ypiranga. A year or two ago much of this area was red clay swamp, with a cottage here and there and a few Italian market gardens producing vegetables for the city dwellers, and land could have been bought for ten milreis an acre or less; today it is worth from two hundred to five hundred milreis; the wet lands have been filled in, an enormous undertaking, rows of workmen's houses extend for miles to the crest of the hill where the Monument stands commemorating the *Grito da Independencia*, and from its summit one has a view that is mottled with factory smoke and punctuated with tall chimneys. To see this and to watch the crowds of pretty chattering Italian girls pouring out of Braz and Moóca factories at noon or evening is to obtain a revelation of the newer South America. It is no longer a land of sugar and brazil-wood only and although the agriculturist may shake his head over the lack of hands on the farm, manufacture in Brazil is a live, energetic phase of her modern development. São Paulo City was employing, by the end of 1921, over twenty-five thousand horsepower of electrical energy in her factories.

The fabric-weaving factories in all Brazil, including cloths of cotton, jute, linen, silk and wool, were 303 in

number in 1914, employing 75,000 workpeople and capital totalling over 368,000 contos of reis; in 1920 they had increased to 328 including 242 cotton mills which alone employed 109,000 hands. The premier producer of cotton cloth in 1920, in values, was Rio de Janeiro (Federal District) with an output worth 102,000 contos; next came S. Paulo State, 92,000 contos; then Minas Geraes, 91,000; Rio de Janeiro State, 46,000; Bahia, 32,000; Pernambuco, 21,000; Alagôas, 16,000; Sergipe, 12,000; Maranhão, 11,000; Rio Grande do Sul, 9,000; Ceará, 3,000; and Piahy, Rio Grande do Norte, Paraná, Parahyba and Espirito Santo, about 1,200 contos each. The States absent from cloth manufacturing returns are the great forestal territories of the extreme north, and those of the vast interior uplands, where conditions are not greatly changed from the time prior to the Portuguese discovery so far as development is concerned.

In numbers of mills São Paulo again comes first with seventy-eight mills making cloths: fifty-five of these weave cotton alone, leaving a higher proportion of fabrics made from other materials than in sister States; generally speaking cotton cloths occupy the greatest share of capital and labour, as for example in Minas, where sixty *fabricas de tecidos* operate, and out of the total value of the production, 23,500 contos, cotton accounts for over 22,600 contos. With a larger number of cotton-cloth mills at work than S. Paulo, but with production worth not much more than one-fourth, it is clear that factories are very much smaller in the interior State; nevertheless, she is able to pride herself upon a thriving industry, occupying nearly nine thousand people, twenty-five thousand contos of capital, and using

ten thousand tons of raw cotton. In common with the other weaver States of the Brazilian Union, Minas ships her cloths to less industrially developed regions: in this connection some light is shed upon the ramifications of finance cum industry by the President of the Sociedade Mineira da Agricultura (Minas Society of Agriculture), Dr. Daniel de Carvalho, in an address at the Cotton Conference held in Rio in June, 1916. Stating that the Minas export of cotton cloth (to other States) was nearly 28,000,000 metres in 1915, he showed that, at an average price of four hundred reis (eight cents) a metre, the total value was more than eleven thousand contos: but in the official statistics the value of exported cotton cloth appeared as only 3,893 contos. "This anomaly is an example of the regimen of fiction in which we live, from the taxation point of view. The Minas legislator votes for high and sometimes excessive taxes,—and the Government in a fatherly manner corrects the excess in calculations of *ad valorem* percentages, accepting a benign interpretation of merchandise values. Instead of products appearing with exaggerated values we find on the contrary that most estimates are well below the real amount, as in the case of manganese. . . ." The cure for this deliberate lessening of values, which certainly does Brazil poor service, would be, said Dr. Carvalho, an all-round diminution of tribute, together with a rigorous application of the law.

In the Federal District the number of weaving mills is thirty-five, several clustering in the mountain valleys of Petropolis and deriving power from waterfalls; the State of Rio has twenty-seven; Santo Catharina, fifteen; Bahia and Maranhão have thirteen each; Rio Grande

do Sul, twelve; Ceará and Alagôas, ten each; Pernambuco, nine; Paraná and Sergipe, eight each; Espírito Santo, three; Rio Grande do Norte, Piauí and Parahyba, one each.

The largest employer of labour in weaving mills is S. Paulo, with (1920) over thirty thousand hands; the next is the Federal District with about twelve thousand; third comes Minas with over eight thousand. São Paulo is also the greatest consumer of raw cotton, using thirteen thousand tons; the Federal District uses eleven thousand tons and the State of Rio nearly six thousand tons, Minas using, as we saw above, about five thousand.

At the end of 1915 when, in spite of great demands upon the national mills consequent upon checked importations of cotton cloth several had to reduce their staff on account of shortage of raw cotton, the Centro Industrial addressed a letter to the President of the Republic in which the plight of the manufacturers was displayed. A cotton famine in the North had reduced the national supply, and raised the price beyond precedent, while importations are always minute in Brazil owing to the heavy duty of about six cents per pound against it. The signatories of the letter explain that the cotton cloth industry never calls for less than forty-five thousand tons ¹ of raw cotton produced on national soil, and that this amount was made up in 1913 into cloth worth over 162,000 contos; that, with the exception of aniline dyes, which cost about 2,000 contos a year, no other prime material enters into the Brazilian cotton industry.

¹ Dr. Costa Pinto reckons over 58,500 tons; he counts 49,648 looms and 1,464,218 spindles, each spindle taking 40 kilos of cotton annually.

"The time is long past when cotton yarns were imported on a great scale for weaving. Now, our numerous factories have created in their vast and modern mills a perfect industrial cycle from spinning to printing," so that the present import of yarns is worth only 1,800 contos, and the value of cotton cloths brought from abroad less than 17,000 contos (1914 figures).

At the same time Brazil's export of raw cotton from the Northern States of fine long staple, usually practically all sent to England, diminished until returns for 1915 show only 5,223 tons against over 37,000 tons in 1913 and 30,000 in 1914, but this restriction did not make up the shortage following the drought. The Centro Industrial asked for a governmental enquiry into cotton conditions; in the middle of 1916 the Conference was held in Rio, samples of cotton, etc., displayed, and, after a collection of facts by a *questionnaire* sent to all weaving mills, expositions of the highest interest were made by officials of the government, technical experts, and cotton growers. Reference is made to this valuable conference under "Cotton," but the manufacturing notes of these pages may include the name of Miguel Calmon, Chemical Director of the Companhia Industrial do Brasil, popularly known as the "Bangú" factory, who gave an address on the use of native vegetable dyes; optimistic as regards tints drawn from Brazilian forests, Senhor Calmon spoke with appreciation of the "urucú," a dye producing hues ranging from yellow to deep red, as well as many other better known colouring matters. There is already a very busy dye factory in Minas, the *Fabrica de Tinta Machado*, using native vegetable bases, and much is expected in S. Paulo from dyes made by the use of "In-

glotina," obtained from mangrove leaves: a factory has recently been established at Cubatão.

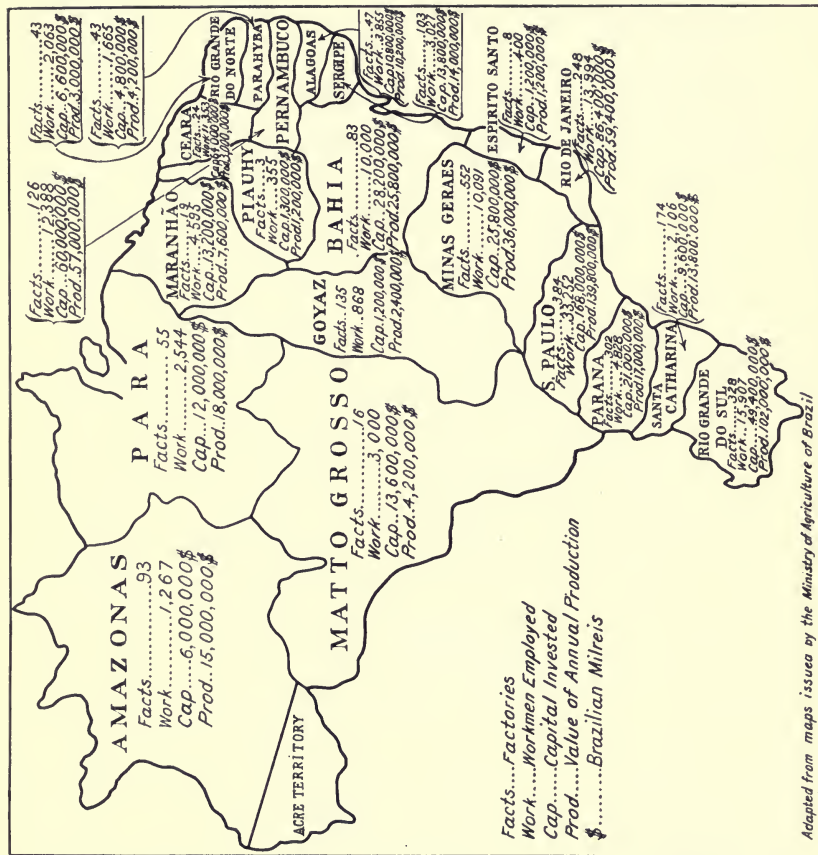
It was at the same conference that Dr. Costa Pinto gave details of the threads spun in Brazil; counting in English measurement, Brazilian mills spin from No. 2 to No. 100 thread. From No. 30 upward a long staple cotton is needed, and only a small proportion of native-grown fibres are suitable, although there is plenty of short fibre for the coarser weaves.

Brazilian manufacturing already depends considerably upon the water power accessible, especially in São Paulo, Rio de Janeiro, and Minas. There is enough hydraulic force available in Brazil to turn the wheels of the world but the majority of these wonderful cascades are scarcely known by name, and many were not charted in the interior of Matto Grosso and Amazonas until the work of the Rondon Commission opened great tracts of those unknown lands. It is not possible here to do more than mention one or two of the most important falls. The Maribondo, in the Triangulo Mineiro, has an estimated force of six hundred thousand horse power; Urubupunga, on the Paraná river, has some 450,000 horse power; Iguassú has 14,000,000, four times as much as Niagara; and the force of the Sete Quedas, or Guayra Falls, on the Paraná near the Paraguay boundary, is calculated at 80,000,000 horse power. The Light and Power companies of Rio, São Paulo, Campinas, Petropolis, and other cities obtain their force from falls, hundreds of little townships in the central interior sparkle with electric lights, run factories and public utilities as a result of a nearby source of water power.

Allusion has before been made to the variety of Brazilian soils and climates which result in her possession of several important and utterly diverse industries; the list is so long that many interesting embryo industries, or others of local or internal importance only, can only claim space for passing mention. Among these is the wine-making industry of the far south, where European colonists cultivate grapes and have created quite a notable business in the production of fairly light red wines. These are shipped to many other parts of the country, are sold inexpensively in Rio and other cities, and while they lack the mellow tone of imported wines, they are sound, good, and popular.

Salt extraction in Rio Grande do Norte is another busy industry, and here is the chief source of Brazil's native salt; it is exported from the ports of Macáu and Mossoró. Also in the north are the famous lace-makers, whose yards of fine *rendas*, made on a pillow with scores of bobbins, would not disgrace Malta; the big, thickly woven white hammocks of Ceará are justly prized all over Brazil, and both lace and hammocks should form the base of an export business. In Maranhão, where the babassú palm grows luxuriantly, a local industry extracts the fine oil from the kernel hidden in a stony shell, and experimental exports have occurred during the past year; the babassú is but one of the valuable nuts of the Brazilian north. One, the "Brazil nut"¹ of commerce, has of course been exported from the Amazon for nearly a century, and is a considerable revenue yielder to Pará and Amazonas states, but the *sapucaia*, of the same family but larger and sweeter, is rarer, less known, and fetches much higher prices in sophisticated world markets.

¹ *Bertholettia excelsa*.



Adapted from maps issued by the Ministry of Agriculture of Brazil

Bancroft Library

In Parahyba State there is at least one considerable coconut oil extracting factory, on a sandy spit south of Parahyba city; several thousand people are said to be employed in this industry and the product is shipped as far south as Rio: in spite of the immense quantity of coconuts on the littoral of the northern promontory there is no copra or fibre industry yet established, apparently because the native consumption of the nut leaves little surplus for the one, and interest is lacking in the other.

CHAPTER VI

FINANCE

Brazilian Currency

IN common with other young countries whose gold reserves are insufficient to back the paper currency used to carry on the ordinary business of life within her borders, Brazil has been and still is faced with difficulties in regard to exchange, i. e., the gold value of her paper and its relation to the face value of that paper. Exchange in Brazil is the measure of the paper milreis (one thousand reis) with English money: this standard is the official one as a result of the preponderance of English finance.

The par value of the Brazilian milreis is twenty-seven pence (fifty-four cents), but at the end of 1916 it was worth 12 pence, rose to 18 in early 1920, and later sank below 8 pence. In 1889 the milreis was actually above par by a fraction of a penny, but later on great fluctuations took place, almost invariably as the result of the issue of large quantities of paper money, which, unbacked by gold, are regarded as of diminishing value in comparison with the gold-backed currency of other countries.

The present rate of exchange, which is a recovery from the first panicky drop of paper here, as in many other parts of the world on the outbreak of the European War, is below a rate which the efforts of Brazilian financial men succeeded in preserving for eight years

by the establishment of the Caixa de Conversão; continuance of exchange at a lowered level is probably partly the result of the issue of extensive amounts of inconvertible paper into circulation for budgetary purposes since the middle of 1914, and partly on account of the heavy demand for bills of exchange on London, which began to have their effect from the time of the Balkan trouble of 1913. The drop would without doubt have been much sharper were it not for three causes of strength: the first is the unprecedentedly large trade balance in favour of Brazil in 1915, amounting to nearly £28,000,000 (\$140,000,000); the second is the Funding Loan which the Federal Government succeeded in making with its European creditors in the latter part of 1914 and which prevented the outflow of other large sums in gold; and, third, the strong gold reserves of the Caixa de Conversão. It is true that these reserves have been drawn upon until they now stand at less than one-fifth of their level at the beginning of 1913, but without that stream of gold and its strengthening effect on circulation it is reasonable to suppose that exchange would have suffered to a greater extent.

The Caixa de Conversão, which I will henceforth call the Conversion Office, is Brazil's concrete effort to fix a rate of exchange; it was excellent in conception and performed its function admirably until unforeseen world conditions overpowered its operation. After the establishment of a Republic in Brazil large issues of paper were for the first time put into circulation, with the accompaniment of successive falls in exchange; the proclamation of the overthrow of the Empire found Brazil with not more than 199,000 contos in paper, but

eight years later the amount had risen to nearly 790,000 and Brazil was obliged to suspend interest on her debt to Europe. A Funding Loan of ten million pounds sterling was arranged with Rothschild's, which had the effect of checking the fall in the value of the milreis, then (1897-98) down to eight pence or nine pence, and even touching the threatening level of six pence; the arrangement included destruction of the debased paper in considerable quantities, and as this work was accomplished exchange steadily rose until in another ten years' time, 1908, outstanding inconvertible paper amounted to less than 650,000 contos, and the value of the milreis was sixteen pence. But by this time the Conversion Office was in operation, thanks largely to the efforts of President Affonso Penna; this office in 1906 began receiving deposits of gold and issuing against them convertible paper bills having the fixed exchange value of fifteen pence; these bills always equalling the amount of gold in the Conversion Office had the value of actual gold; they differ in appearance from the ordinary paper currency, and as they always command a five per cent premium there was created a tendency to hoard them—a tendency which cannot occur in the case of the bills of the similar Conversion Office of Argentina, which exactly resemble the ordinary bank bills.

By the end of 1909 the unbacked, inconvertible paper currency of Brazil was about 628,000 contos, while the convertible bills of the Conversion Office amounted to over 225,000 contos, with an equivalent amount of gold on deposit there; in 1910 it was found possible to raise the official value of the milreis to the point that the money market indicated, sixteen pence, and at this rate of exchange all the paper in the country

stood until the outbreak of the European War. At the same time that the exchange rate was officially raised a rule was put into operation by which all foreign coins were received by the Conversion Office at rates based on their mint value, excepting English sterling which was still accepted at its exchange value.

It is likely that had neither the Balkan nor the great European wars happened Brazil might have been able to raise again the official value of the milreis farther towards par; at the end of 1912 and beginning of 1913 the gold-backed paper amounted to over 406,000 contos of reis, and the unbacked was only 607,000 contos. In spite of the accumulation of heavy debts Brazil was in such a flourishing condition that she was able to show convertible currency amounting to two-thirds of the value of the inconvertible, as against one-sixth in 1907-8. Today, with eighty per cent of the gold of the early 1914 high-water mark gone from the Caixa, the convertible currency is but one-tenth of the inconvertible, a matter for regret, but things are undoubtedly in a much better condition than had the Conversion Office not existed. Suspension of conversion was ordered when deposits were reduced to £5,005,000.

Since the middle of 1914 the Brazilian Government has been obliged to issue nearly 400,000 contos of new inconvertible paper; it has not actually added more than about 100,000 contos to the total paper currency, since at the same time a shrinkage in the convertible element has been proceeding. An emergency issue of 250,000 contos was made in the autumn of 1914 and another 150,000 was authorized in August, 1915. During the same period of stress the internal floating debt was added to by the issue of Treasury Bills to the nominal

value of about 250,000 contos: a curious and instructive situation arose from the employment of these special Bills.

The Government, called upon for currency by national banks which were embarrassed by lack of paper owing to the financial *crise*, lent them sums from the emergency issue, charging two and a half per cent interest. Next, pressed for payment by creditors many of whom were merchants supplying the various governmental departments, and the emergency issue being insufficient for the purpose in all cases, recourse was had to Treasury bills; as these are not legal tender the merchants were not altogether pleased, and in some cases refused to accept the bills and had to wait longer.

The creditor who did accept them found himself with paper in his possession which could not be passed over the counter or paid into a checking account at his bank, and his only recourse was to sell the bills for what they would fetch, bearing the loss between their face value and market price. Although the bills bear interest at five and six per cent, almost the only buyers were the banks which had borrowed money of the Emergency issue, for in the meantime the Government agreed to accept the Bills as repayment of these sums, in a "curso libre," or (limited) legal tender.¹ The price of the Treasury bills was always below par, and the writer saw them quoted in Brazilian newspapers as low as seventy-six. Buying at this or higher prices the bankers were able to present them to the Government at their face value in payment for currency advances, and were thus in the fortunate position of making profits on borrowed money. Promptly labelled

¹ Refusal to accept its own paper would of course have had the immediate effect of dangerously depressing all Government issues.

“sabinas” in this country where everything has a nickname, the Treasury Bills roused a storm of discussion in the press. Totals of bonds (apolicies) and paper money issued from August 1915 to October 1916 amounted to nearly 550,000 contos.

In late 1916, the total currency of the Republic stood as regards paper money at 1,551,122:650\$500, over a million contos being inconvertible. It may be useful here to explain the manner in which Brazilian money is counted. It is, like the Spanish from which most American systems are derived, very simple, based as it is on the decimal plan. The theoretical single *rei* or *real* does not exist, the smallest coin now consisting of the nickel one hundred *reis*.

There is also a coin of two hundred reis, which pays a car fare or buys the *Jornal do Commercio*, and 400 reis, and a silver 500 reis. The silver *milreis* is what it says it is, one thousand reis, and any sum reckoned in milreis and below a thousand of them is written with the figures first, followed by the “dollar” sign; thus four hundred milreis is written 400\$000.

One thousand milreis (a million reis) is a *conto*, the colon sign being written immediately after it. Six contos is written 6:000\$000. The present exchange value of the conto is a little over fifty pounds sterling.

The following figures, extracted from reckonings made by the *Brazilian Review*, show some of the variations in paper currency:

¹ There are in existence small copper coins, relics of the day long past when less than a hundred reis would buy something, but they are not in circulation because they have no purchasing power. The post office sometimes presents them as change for some fraction of 100 reis, and the recipient usually puts them into the hand of the first *mendicante* encountered outside.

December, 1889.....	195.485:538\$
“ 1894.....	367.358:625\$
“ 1899.....	733.727:153\$
“ 1904.....	673.739:908\$

After the establishment of the Conversion Office a new element, convertible paper, was added:

	<i>Inconvertible</i>	<i>Convertible</i>	<i>Total</i>
1907.	643.531:727\$.	100.032:700\$.	743.564:427\$
1912.	607.025:525\$.	406.035:800\$.	1.013.061:325\$
1914.	822.496:018\$.	157.786:930\$.	980.282:948\$
1916.	1.060.562:720\$.	94.559:930\$.	1.155.122:650\$

Issues of paper money during war years greatly increased this currency, but against it the Government held, in 1921, nearly 63 million contos of gold, in the Treasury and Conversion Office. Besides this amount of paper there is the coin circulation of nickel, and of silver in half-milreis, milreis, and multiples.

It is an excellent coinage, of good design, well made and convenient, that minted since the Republic bearing republican devices, the date of inauguration of the new administrative plan, etc. But now and again a handful of change contains a coin bearing the bearded head of Dom Pedro II, for it is but twenty-seven years since the Empire was ended. A curious superstition exists among some Brazilians with regard to these coins; received, they are never passed on, but carefully put away in some drawer: “it is not good to spend the Emperor,” they will tell you, handling his image with kindness.

The six million pounds sterling below which the gold reserves of the Conversion Office have not been allowed to sink, and to which it has been possible to add little,

back the large amounts of convertible paper, and, although a greatly shrunken sum, it has its effect in steadying exchange: another factor in preventing farther breaks, in spite of the seventy per cent increase in inconvertible paper, is the earnestness with which the Federal Government and the people of Brazil are insisting upon a vigorous solution of the problem of the foreign debt. Individuals in Brazil show themselves no less interested than officials: letters bearing upon the situation are constantly printed in the public press, many personal sacrifices have been made of percentages of salaries by legislators, officials and civil servants, and it is clear that the ablest heads in Brazil are trying to find a way in which Brazil can meet her obligations. This sincerity of purpose may not create gold, but it does strengthen public credit and helps in a more or less direct manner in restoring confidence which is certainly not without its effect upon exchange.

More than once a fall of exchange in Brazil has, by an anomaly, actually saved industries from something near bankruptcy. This is readily understood when it is realized that exporters of such products as rubber and coffee, cacao and hides, selling in the markets of London, Paris, Hamburg or New York, are paid in gold, while they pay their day labourers in paper. To the Brazilian interior it is of little interest that the bankers of Rio say that it takes another milreis paper to purchase a gold pound sterling; the country markets do not reflect such *nuances*, unless, indeed, a fall should be heavy and continued in which case it must in course of time react upon the whole country. But a temporary depression does not affect the amount of black beans or mandioca that can be bought with a milreis, and neither the

rubber collector of the Upper Amazon or the more sophisticated worker upon a *fazenda* of coffee or cattle will demand a rise in wages because exchange goes down for a time. To the exporter the fraction of a milreis makes all the difference between prosperity and ruin, and both rubber and coffee have benefited thus by temporary low rates of exchange; the present crisis has certainly been smoothed to the agriculturist, the producer and exporter, of Brazil, by the fall in exchange since the middle of 1914, the paper receipts of the country showing marked inflation due to the larger number of milreis bought by the foreign gold paid for these products. Low prices received abroad for coffee and rubber are thus compensated, and when, as has happened since the war began, prices have been better than had been predicted, it is not to be wondered at that there is a feeling of prosperity in Brazil and that money is abundant among certain classes in spite of administrative difficulties.

The people who really suffer from fallen exchange are, besides the governments owing sums abroad which must be paid in gold, the importing houses which have bought in gold and must sell in depreciated paper, and which cannot always adjust paper prices to fit the monetary market; the transportation companies, too, whose rates are fixed now find themselves with paper in hand of a lowered value abroad; it is true that their obligations to employees are paid in paper, but since most carrying companies are owned or leased in Europe, and dividends must be paid in gold, earnings are very much reduced when large quantities of additional paper are needed to buy bills on London. Every railway, port company, street-car line and lighting and power com-



Ministry of War, Rio de Janeiro
Avenida Nazareth Belem (Pará)

pany which derives its capital from outside Brazil has seen its dividends cut down during the last two years even if earnings have been larger and expenses reduced.

Large foreign debts have of course a depressing effect upon exchange in the long run, but at the time when the loans have been made there has almost always been a rise corresponding to the influx of gold; this effect was a marked cause of wild ups and downs of exchange in the palmiest days of the present century. I have frequently asked bankers in Brazil if they would like to see an absolutely stable rate of exchange: more than once the answer has been Yes, and the examples of the stabilized countries of the world quoted as showing that real financial strength can only be obtained with a firmly gold-backed currency. But even the most conservative banker will admit that variations in exchange have been the cause of large earnings on the part of financial houses in Brazil, and it is certain that fluctuation is not only the source of many fortunes, but that it materially lends itself to the promotion of the gambling spirit that helps both to make and to undo a young country; it is a spirit prevalent in many parts of Latin America and perhaps particularly in Brazil where such spectacular turns of Fortune's wheel have been seen from time to time in different parts of the country.

Investment in Brazil

Investment in Brazil from other countries has been of three chief kinds: blood, brains, and money. The investment in blood came during the sixteenth, seventeenth and eighteenth centuries almost exclusively from Portugal—with a forcibly introduced negro element

from Africa at the same time—while during the nineteenth century colonies were introduced of a remarkably wide variety of peoples; the investment in brains came so far as technical skill is concerned almost directly as a result of the great investment of the third element, money, which began soon after the erection of the monarchy in Brazil in 1808, flowed steadily for eighty years, and increased to a golden torrent after the establishment of the republic in 1889.

Nearly the whole of the investment of manhood, skill, and gold came from Europe. Brazil's debt to other parts of the world is small. The African slave contributed more towards the opening up of Brazil than any other race, and it is almost impossible to conceive of a flourishing Brazil without him during at least the first three centuries after Portuguese possession; the Asiatic only came here in noticeable numbers since the beginning of the present century, and the Oriental is not a strong element. North America has done remarkably little for Brazil. With the exception of a few technically skilled individuals, and the ill-fated little colonies which sought a home here after the Civil War in the United States there has been practically no investment in personality until within the last few years, when branches of American businesses have sent resident employees to Brazil: investment in money is still in its infancy so far as Government or State loans¹ are concerned, development work in railways, docks, harbours, or city improvements, and it is only within the last few years that North American money has

¹ Since 1916 half a dozen Federal or State loans have been made to Brazil, successfully floated by New York financial houses.

made timid entry into Brazil for the establishment of industries. The opening of branches of North American financial establishments in Brazil dates only from 1915, and the capital so far employed is insignificant in comparison with that of the powerful European banks, established in South America for a couple of generations.

No Brazilian securities were, up to the end of 1916, listed upon the New York Stock Exchange, for the simple reason that there were practically no North American investments in South American securities; but since the war, changes in the world's finance have induced a lively interest.

The British investment in Brazilian securities, apart from many enterprises and businesses of a private nature, were reckoned at the commencement of 1916 at £226,719,052, or the equivalent of about \$1,133,595,000. The French investment is estimated at Fr. 1,500,000,000 or some \$300,000,000, and that of Belgium, with considerable railway interests, at about half this sum; Germany and Portugal also hold a certain quantity of Brazilian securities.

The following are the most important securities represented by the British investment in Brazil; the list shows that it was this money, more than any other element, which contributed to the opening-up of Brazil in the nineteenth century, giving her railways, public utilities, and helping to operate a number of industries. There was no philanthropy about this stream of bright pounds sterling. South American investments were expected to return a better rate of interest than did similar securities in Great Britain, and frequently results justified the hope. The average return on

British investments in South America, which altogether total about £1,050,000,000 (say \$5,250,000,000) in 1913 was four and seven-tenths per cent; this average dropped to three and one-half in the first year of the European War, a showing which very many profit-earning corporations in other regions of the world would have been glad to equal in that critical time.

BRITISH INVESTMENTS IN BRAZIL

Railways

<i>Amount</i>	<i>Name</i>
<i>invested, 1916</i>	
£605,569.	Brazil Great Southern
£341,000.	Brazil North Eastern
\$57,835,200.	Brazil Railways, 5 classes ¹
£4,187,650.	Great Western of Brazil, 4 classes
£15,893,429.	Leopoldina, 6 classes
£2,600,000.	Madeira-Mamoré
£4,000,000.	Mogyana Sul-Mineira
£100,000.	Quarahim International Bridge
£6,000,000.	São Paulo (to Santos)
£3,175,000.	Sorocabana
£900,000.	Southern São Paulo

Public Utilities

£1,154,700.	Port of Pará
£115,800.	Cantareira Water Co. (S. Paulo)
£1,321,900.	City of Santos Improvements, 4 classes

¹ Brazil Railways securities are listed in dollars because the company which bought up or leased a number of European-constructed enterprises, was, although financed entirely with French, Belgian and British money, registered in the State of Maine.

£2,000,000..	City of S. Paulo Improvements
£1,200,000..	Manáos Harbour and Manáos Improvements
£349,000..	Pará Improvements
£1,761,875..	Rio de Janeiro City Improvements, 4 classes
£1,423,400..	Central Bahia Railway Trust, A and B
£275,000..	S. Paulo Gas, 2 classes
£2,571,871..	Rio Claro Ry. and Investment, 2 classes
£527,800..	Amazon Telegraph, 2 classes
£91,000..	Pernambuco Waterworks, 2 classes
£596,000..	Manáos Tramways
£1,384,449..	Pará Electric, 4 classes
\$110,361,400..	Brazilian Traction, Light and Power, 2 classes
\$1,400,000..	Jardim Botanico Tramways
\$28,013,500..	Rio de Janeiro Tramways, Light and Power, 2 classes
\$6,821,917..	S. Paulo Tramways, Light and Power, 2 classes
\$2,000,000..	S. Paulo Electric

(The five last mentioned companies are registered in Canada, and the securities are thus issued in dollars, although the stock was largely held in Great Britain and Canada, prior to the European War.)

Industrial Companies

£1,182,400..	Dumont Coffee Estates, 3 classes
£120,000..	S. Paulo Coffee Estates
£150,000..	Agua Santa Coffee Co.
£646,265..	S. Juan del Rey Mining
£643,601..	Rio de Janeiro Flour Mills
£100,154..	North Brazilian Sugar
£100,000..	Mappin and Webb (Rio and S. Paulo)
£850,000..	Brazilian Warrant Co.

At the same time the British share in the total foreign debts of the Federal, State and Municipal govern-

ments are estimated at about £150,000,000 out of aggregate obligations of some £180,000,000. These debts are treated in more detail on another page.

There are very many enterprises carried on with British capital which do not figure upon the Stock Exchange, or are branches of businesses which do not differentiate the capital employed in Brazil. Included in one or other of these classes are the shoe factories belonging to Clarke (Glasgow) in São Paulo; the cotton-spinning mills of Coats, also heir of Scotch skill; several cotton cloth mills, as the Carioca in Rio, and others in Petropolis and Campos; sugar factories in Pernambuco, etc. Included also in money investments should be counted the eight and a half million pounds of paid-up capital of the three British banks, the British Bank of South America, the London and Brazilian and the London and River Plate, which total with their branches to twenty-four establishments. It is impossible to say what part of the huge shipping investment serving Brazil should be included, but it is a highly important element and quite the greatest developing factor in Brazilian commerce; the Royal Mail is the great popular passenger and freight line, while Lamport & Holt, Booth, Harrison, the Prince, Johnson, and other smaller lines do a big Brazilian business.

Among firms doing energetic work and with large capital invested are the two great coal firms, Wilson's and Cory's, with their depots for Welsh coal, their fleets of lighters, repair equipment, salvage departments and stevedoring; old-established commercial firms such as Stevenson's and Duder's in Bahia, chiefly occupied with cacao export—the latter in addition to

other activities maintains a fleet of modern whaling boats, and a factory for refining whale-oil; there are the "dry goods" stores of Sloper's series; the new house of Mappin; the Brack firm in Pernambuco; all these and a score of other classes are not only commercial developers but in a greater or smaller degree employers of Brazilian labour. There are British cattle breeders, sugar and cotton growers, owners of coffee and cacao estates, operators of ironworks, foundries, schools, bookshops, oil-depots, and many other enterprises. The total British investment of money in Brazil cannot be under £300,000,000.

The external debts of the Brazilian States and Municipalities have varied very little since 1913-14. Loans became difficult to obtain from the beginning of Balkan troubles, while since the outbreak of the great European War there have been no additions to cash advances and in only a few cases has there been substantial reduction of debts. On the contrary, most debtor States and cities found it necessary to make funding arrangements by which specie payments were suspended for a number of years—measures which gave temporary relief, but seriously increase the amount of money to be paid annually when the funding period comes to an end.

Certain states, as São Paulo, Rio de Janeiro, Paraná (paid up until the autumn of 1917), Espírito Santo, and the Federal District, have made gallant efforts to avoid piling up debt in this way, and by severe economy have continued to pay interest on their foreign obligations. The sacrifice has not been small, for with depressed exchange it has taken an unusually large number of paper milreis to buy sterling, and at a time when it has

not been easy to collect even paper revenues. The effort is all the more creditable.

With the worst part of the 1921 crisis past, state finances have been materially eased by calls for Brazilian products at enhanced prices, and there is a perceptible restoration of confidence, at the end of 1922. In some districts the post-war boom proved an undisguised blessing, bringing profits that could not have been looked for under normal conditions: coffee, hides, rubber, cacao, frozen meat, sugar and manganese, have all brought stimulated prices, and many home industries, such as coal mining and cotton spinning and weaving, have been greatly encouraged.

In round numbers the external debts of the separate states of the Brazilian Union appear to amount to about forty-seven million pounds, with the municipalities adding another twelve or thirteen million pounds.

The British interest in these loans is largely dominant, but important sums of French money have also been invested. Brazil's direct debt to France includes £10,400,000 for three loans with which the Bahia, Goyaz, and Corumbá railways were constructed; there are also state debts, that of the State of Pará being held by Meyer Frères of Paris, while the Société Marseillaise holds the bonds of the big Amazonas debt. Part of São Paulo's debt is owed to the Société Générale, and the State of Espirito Santo owes nearly two million pounds to the Banque Française et Italienne, as well as large sums about which a dispute rages, advanced by the French Hypothecary Bank established at the port of Victoria.

There is a good deal of French money sunk in the Madeira-Mamoré railway, one of the Farquhar under-

takings which cost the equivalent of more than six million pounds sterling, fifteen hundred lives, is said to need much reconstruction already (opened to traffic in 1912), and does no more than pay its way. French bondholders also hold part of Minas Geraes debt, and of that of Rio de Janeiro. French engineers, operating with French money, built several of the existing railways, notably the Auxiliaire de Chemins de Fer au Brésil with 1,400 miles of track; it was a French firm, the Compagnie Française de Rio Grande do Sul, formed in Paris in 1906, which put one hundred and fifty million francs into the port works of that southerly city, opened to shipping in November, 1916. French companies also began the port works of Pernambuco, checked by money paralysis after 1914, and constructed the new harbour facilities of Bahia.

When the much-discussed "Missão Baudin" came to Brazil in 1915, it was with the object of investigating the condition of the properties in which French money was concerned, and the chief member of the party was also credited with an effort to induce the Brazilian Government to guarantee the rather clouded State obligations to French bondholders.

German investment in Brazil is, as regards money, not of great importance; it is largely confined to the loans made by the Dresdner Bank, and to capital expenditures in the southern states, including the construction there of a couple of small railways. There has, however, been great investment of blood and energy, there are many strong German commercial houses and retail stores in all districts, and to Germany was due the first granting of long and easy credit facilities to Brazil. Germans have been largely interested in the coffee

and rubber businesses. The Brasilianische Bank für Deutschland operates with a capital of fifteen million marks, and the Banco Alemão Transatlantico is another strong German financial house.

This summing up of European investment in Brazil, incomplete as it is, serves to demonstrate the extent to which Brazil has been opened up by Europeans. The European has asked for Brazilian raw products, brought ships to carry them, built ports for the ships to lie in and railroads to freight the products to the ports; has sold manufactured goods and lent Brazil the money with which to pay for them, and established banks for financial operations connected with the business created. Millions of hardy and industrious people have gone to live in Brazil and to bring the land into cultivation, to educate their children as Brazilians and help in the mental progress of the country.

When, therefore, some of the less thoughtful journals of the United States turned their eyes towards South America at the outbreak of the European War and protested loudly that this country was not getting her "share" of commerce, it was rather as if the cuckoo complained that she was not getting her share of the robin's nest. To accuse Europe of monopolizing Brazilian trade is like accusing water of monopolizing the river. Brazil, in fact, like the whole of the Americas, had no trade until Europe created it by calls for natural products, supply of transportation means, and loans of money for development work.

Today the situation is changed. It was inevitably changing as North America herself became during the last fifty years herself a caller for raw products, and began to take great quantities of Brazilian coffee and

rubber, drugs and hides. Her sales to Brazil, despite the drawback of the shipping triangle, have been increasing for some time along certain highly specialized lines, but sales and purchases are not sufficient to create a permanent link between countries, especially when conducted through the medium of a third person as freighter and banker. The European War brought about as no other awakening process perhaps could have done, a realization of the new duty of the United States to South America: it is part of her inheritance from Europe. It is the work that lies to her hand: if she will do it, there is no one better fitted at the present time; if she will not she loses an extraordinary chance for both service—and profit.

She must not think only of buying and selling, and when she is occupied with this trading she must remember that to her as to South America, sales of North American goods are less important than purchases of South American raw materials. It would not matter very much to the United States if she did not sell anything to Brazil: the probability is that more money has been spent on making sales, so far, than the profits amount to. What does matter is that North American manufacturers should continue to be supplied in vast and increasing quantities with South American hides for the use of leather manufactories; with ivory nuts for the button industry; with the coffee that cannot be grown in northern climes; with rubber and fibres and tannin materials; and with the minerals that exist in the sands and rocks of South America in unexampled variety and which can be there produced at half the cost that North America is forced to pay for labour.

Apart from trading there is a great need for more investment in Brazil, for more opening of great spaces, planting of fields, lumbering, road-building, mining, cattle-raising. There is space for twenty million people in the cool temperate zones alone, excluding tropical areas. Is the United States ready to take up the task which Brazil cannot perform alone, however seriously she attacks her problems? Is she prepared to devote to this work blood, brains and money?

Entry of North American interests into Brazil has been steadily increasing for the last ten years, and was hastened after the outbreak of the European War; there has been noticeable since then much more energy on the part of individuals and small firms. Before 1914 the bulk of United States work done in Brazil was part of the international campaign of such big firms as Standard Oil or the Singer Sewing Machine Company. Oil has its rivals in other companies, also with depots on the coast, but the Singer machine has almost a South American monopoly; locomotives, cars, elevators, most of the typewriters, electrical equipment, and quantities of agricultural machinery, are sold by American houses with branches in Brazil. Agricultural, printing and shoe machinery of United States origin also seems to make good sales.

In 1915 the National City Bank of New York opened branches in Santos, Rio and S. Paulo; the United States Steel Corporation started a line of freight steamers, and was followed by a number of new lines.

The two great Light and Power companies of Rio and S. Paulo are Canadian, but some of the capital, equipment and personnel are from the U. S.; one of the two existing packing-houses is Chicagoan in capital,

equipment and personnel. Several of the allied enterprises of the Brazil Railways Company are American managed and equipped, as the lumber mills at Tres Barras and the cattle company, as well as part of the transportation lines. The Brazil Railways is the largest American-registered company in Brazil, but is rather an example of how not to do things in South America, for although a few interests, as those cited above, are doing well, the company as a whole is in the hands of a receiver. The time is probably past when money could be obtained in Europe by persons registering a company in a second country to spend it in a third, and what is most needed now is continued and genuine development work actually financed from North America.

Most of the United States firms with agencies in Brazil are sellers, but among the purchasers are several coffee-importing houses and, with the eclipse of German traders, the greatest rubber dealers, while the past year has seen American agents coming to Brazil to increase takings of manganese, precious stones and hides.

The State Debts

The figures given below are in round numbers only, and are without the additions which the Funding loans entail; all sums are in pounds sterling:

<i>State</i>	<i>External Debt</i>
Alagôas.....	£ 500,000
Amazonas.....	3,000,000
Bahia.....	3,875,000
Ceará.....	600,000

<i>State</i>	<i>External Debt</i>
Espirito Santo.....	1,160,000
Maranhão.....	720,000
Minas Geraes.....	6,800,000
Para.....	2,040,000
Paraná.....	2,200,000
Pernambuco.....	2,370,000
Rio de Janeiro.....	3,000,000
Rio Grande do Norte.....	350,000
Santa Catharina.....	220,000
São Paulo.....	20,350,000

The States of Goyaz, Matto Grosso, Parahyba, Piauhy, Rio Grande do Sul and Sergipe have no external debts.

The Funding Loan arranged by the State of Pará adds another £1,070,000 to her debt; the Funding Loan of Minas Geraes adds £600,000 and that of Amazonas, £850,000.

The external debts of Brazilian municipalities, also borrowers from Europe, are about as follows, round numbers again being used:

Federal District of Rio de Janeiro.....	£4,395,000
Manãos (Amazonas).....	214,000
Belem do Pará.....	750,000
plus Funding Loan.....	88,500
Recife (Pernambuco).....	400,000
Bahia.....	2,000,000
São Paulo.....	750,000
Santos.....	1,000,000
plus Funding Loan.....	118,000
Other municipalities in S. Paulo State..	685,000
Porto Alegre (Rio Grande do Sul).....	600,000
Pelotas (Rio Grande do Sul).....	600,000
Bello Horizonte.....	216,000

Federal Debts

On the outbreak of war in Europe in August, 1914, the foreign debts of the Federal Government of the United States of Brazil amounted to something over £102,000,000. President Wenceslao Braz inherited obligations which had been enhanced by about £30,000,000 during the previous four-year régime of Marechal Hermes da Fonseca. Brazil's reputation as a good world customer had long permitted her to borrow freely, often paying old debts or interest with new loans, and piling up deficits as the most facile solution of economic complications.

The world shock of 1914 brought exchange down with a run, and, although it recovered from the first fall, it was soon evident that Brazilian credit could not bring it back to its old level, and that the financial burden of the country, its obligation to pay foreign debts, would be rendered still more onerous by this depression; it would take just so many more milreis, with Federal receipts perilously lessened by the stoppage of imports, to buy pounds sterling, than in normal times.

Brazil asked her foreign creditors for relief, obtained a Funding Loan by which payments on interest and amortization were suspended until October, 1917. As the specie payments called for by the foreign debt would have needed about £5,200,000 in both 1915 and 1916, a burden was lightened, for the time, which the increased balances of trade during the intervening period have also helped to lift. But between 1914 and 1918 the Foreign Debt was increased by nearly £12,000,000 of accumulated interest, and the sums

required for annual service were more difficult to find after the depreciation of the milreis in 1920. In 1920 the total nominal Foreign Debt was £120,400,000, plus 325,000,000 francs. Later, Brazil borrowed a few millions from the United States, and in early 1922 again borrowed successfully in London. The internal debt, at the beginning of 1921, amounted to over one million contos. It will be seen from the following list that while nearly £12,000,000 came from France yet the great bulk of the borrowed sums came from England originally: a considerable proportion of the original sums—apparently about forty per cent—were destined to the construction or acquisition of railways and port works in the Republic.

BRAZIL'S EXTERNAL STERLING DEBT, DECEMBER 31ST, 1920

	STERLING		
Loan—	£	s.	d.
1883.....	4,599,600	0	0
1888.....	6,297,300	0	0
1889.....	19,837,000	0	0
1895.....	7,442,000	0	0
1898 (Funding).....	8,613,717		
1901 (Recision).....	16,619,320	0	0
1903 (Port Works, Rio de Janeiro).....	8,500,000	0	0
1908.....	4,000,000	0	0
1910.....	10,000,000	0	0
1911 (Port Works, Rio de Janeiro).....	4,500,000	0	0
Ceará Railways, 1911.....	2,400,000	0	0
Lloyd Brasileiro, 1906-1911.....	2,100,000	0	0
Loan—			
1913.....	11,000,000	0	0
1914 (Funding).....	14,502,396		
Total nominal.....	120,411,334	0	0

FRANC DEBT

1908-1909—Loan for the construction of the Itapura to Corumba Railway	100,000,000
1909—Loan for the Port Works at Pernambuco	40,000,000
1910—Loan for the construction of the Goyaz Railway	100,000,000
1911—Loan for the construction of the Viação Bahiana network of railways	60,000,000
1916—Goyaz Railway loan, responsibility for which was assumed by the Government by Decree No. 12,183 of August 30th, 1916	25,000,000
Total nominal	Fr. 325,000,000

This would be an exceedingly heavy debt if Brazil were an old, exploited, filled up country with no spare lands and her natural resources tapped; Brazil's reason for hopefulness lies in her youth, the vast undeveloped land and mineral resources of her patrimony, her good credit among the nations, and the sincerity with which her statesmen are attacking the task of resuming interest payments.

Brazil has a big income, but it needs to be increased before she can pay her debts without a strain; the President has repeatedly declared his firm intention to sustain payments at whatever sacrifice, and has recently called the States into conference with a view to devising new methods of raising revenue. In the Budget estimates of the Federal Government for 1921 revenue was reckoned at 102,000 contos gold (milreis = twenty-seven pence) and 624,761 contos paper (probably a fraction over twelve pence); expenditure at the same time was calculated at 75,680 gold and 711,640 paper contos, including in the gold payments the service of the foreign debt.

The Federal Government's chief revenues are derived from import taxes, impartially placed upon entries into all the States; income of the States is mainly derived from export dues, while municipalities get revenues from imposts upon professions and industries, and manage sometimes to get a share in export dues. The Acre Territory, purchased by the Brazilian Government from Bolivia in 1903, is the only part of Brazil paying export as well as import dues to the Federal authorities, this contribution coming from rubber.

To help raise new revenues, *impostos do consumo* (excise) have been increased on articles consumed in the country, the addition to the burden of the retailer and the consumer himself raising some outcry, as has also the suggestion to put on railway freight imposts. The States, exporting larger quantities of goods than normally, are not so badly placed as the Federal Government, but that they look upon the matter of raising income from produce exported with different eyes in different parts of the republic is shown by a look at some of the export tax figures for 1922; these figures are not constant, as the *pauta* is frequently changed by the officials of exporting points in response to conditions in international markets:

Coffee, the premier export of Brazil, pays to S. Paulo an export tax of 9 per cent, plus five francs a bag for Valorization service; in Minas it pays 8½, plus five francs a bag, used for administrative purposes; Bahia coffee pays 10 per cent of its value, Pernambuco 4.8, Paraná 30 per cent, Santa Catharina 8, Espirito Santo 12½.

Cacao pays in Bahia 14 per cent of its value; in Amazonas 5 per cent; in Pará 5 per cent; in Maranhão 4 per cent.



Fishing Boats of North Brazil.



Rocks at Guarujá, near Santos.



Bertioga, the Old Entrance to Santos.



Cantareira Water Supply, São Paulo.

Sugar pays in Pernambuco, the principal producing state, 8 per cent, with additional charges bringing this to nearly 10 per cent for interstate, and 12 per cent for foreign, exports; in Bahia, 4 per cent; Alagoas, 7.8; Paraná, 4.4; Rio sugar pays $2\frac{1}{2}$ to the State and 2 per cent to the municipality of Campos.

Rubber pays 15 per cent of its value in Amazonas, or half of the amount paid in the palmy days of the industry; Pará charges 18 per cent; the Acre, 6 per cent; Matto Grosso, 10 per cent.

Cotton pays 11 per cent in Pernambuco, nearly 12 in Alagoas, 8 per cent in Bahia.

Hides pay 20 per cent in Amazonas; Maranhão, two cents a kilo; Pernambuco, 18 per cent; Alagoas, 13 per cent; Bahia, 15 per cent; Paraná, and Santa Catharina, 10 per cent; Rio Grande do Sul, 10.5; Matto Grosso, 6 per cent.

Tobacco pays a variety of dues, ranging from 12 per cent in Bahia, the chief exporting point, to 4 per cent in Pernambuco and the southern States.

Matte pays 3.6 in Rio Grande, 46 reis a kilo in Paraná and 20 reis a kilo in Santa Catharina.

Frozen meat, a new industry, escaped taxation until September, 1916, when Rio put on a tax of about one-hundredth of an American cent per pound, a delicately weighted burden, which a vigorous industry can stand perfectly well if it is not multiplied too much.

Principal Banks in Brazil

Certain strong banks, as the three of British origin (London and Brazilian, London and River Plate, and the British Bank of South America), have branches or

agencies at several places, the two first possessing establishments in every important town; the National City Bank of New York has three Brazilian branches (Santos, Rio and S. Paulo); the French-Italian Banque Française et Italienne and the (French) Crédit Foncier have several branches besides the establishments in Rio and S. Paulo, as also have the (German) Banco Alemão Transatlantico, Brasilienische Bank für Deutschland, and the Sudamericanische, the (Spanish) Banco Espanol del Rio de la Plata, and the (Portuguese) Banco Nacional Ultramarino, and the (Italian-Belgian) Italo-Belge.

The Banco do Brasil is the strongest Brazilian bank, with headquarters in Rio and many branches. In addition to the houses spreading all over Brazil each State has its own banking firms established in the capital. In banking power the Federal Capital, Rio de Janeiro stands first, with a capital of nearly 46,000 contos of reis; S. Paulo is next, with banking capital of over 13,000 contos; Rio Grande do Sul comes third, with over 11,000 contos, Minas Geraes following, succeeded by Bahia and Pernambuco, Pará and Amazonas.

The chief banks of Rio, in addition to the three British, one American, and other foreign banks above mentioned, as well as the Banco do Brazil, are the Banco Commercial do Rio de Janeiro; the Banco do Commercio; Banco do Estado do Rio de Janeiro; Mercantil do Rio de Janeiro; and the Lavoura e Commercio do Brasil. São Paulo, besides the foreign establishments, has the Commercial do Estado de S. Paulo; Banco do Commercio e Industria de S. Paulo; Banco de S. Paulo; Banco de Credito Hypothecario e Agricola do Estado de

S. Paulo; the Banco de Construcções e Reservas, and the União de S. Paulo.

Among the local banks doing excellent service are the Hypothecario e Agricola do Estado de Minas Geraes (headquarters in Bello Horizonte); the Provincia do Rio Grande do Sul; Banco do Porto Alegre; the Banco do Recife (Pernambuco); the Commercial do Pará; Credito Hypothecario e Agricola do Estado da Bahia; Banco do Ceará; Banco do Maranhão; but many other places also have comparatively small banks, and in addition there are many private "Casas bancarias"—financial houses—strongly entrenched, doing sound and useful work.

CHAPTER VII

THE WORLD'S HORTICULTURAL AND MEDICINAL DEBT TO BRAZIL

LOUDON, the English horticultural authority, says in his *Encyclopædia of Gardening* (1835) that "some of the finest flowers of British gardens are natives of South America, especially annuals." He mentions the dahlia—by the obsolete name of Georgina; the Marvel of Peru (*Mirabilia*) the *Calceolaria* and the *Schizanthus*, adding that "beautiful shrubs are not less numerous, but they are generally inmates of greenhouses."

Since Loudon wrote Brazil, as other parts of South and Central America, has been the happy hunting ground of plant explorers, and the gardens of Europe and North America have been beautified to an extent of which that devoted horticulturist never dreamed. The tale of the indebtedness of the gardens of less fortunate climes to South America in general and Brazil in particular for plants and shrubs, both ornamental and of economic value, would occupy a large volume; the extent of the debt is no less great than general ignorance of it. Practically nothing is known of early attempts to introduce Brazilian plants, for they were failures, and failures they remained for two and a half centuries after South America was discovered. The science of botany and art of gardening were alike in primitive stages until the latter part of the eighteenth century, and, whilst South American plants were known by their local names, means for their successful

transportation had not been found; nor, in the rare cases of their surviving long journeys by sailing boat, was successful cultivation of these exotics known. If, as is possible, there are yet in herbariums in Portugal any plants which the early colonists sent home, no printed record of them seems to exist.

It was not until the second decade of the nineteenth century that any serious attempts were made to reveal to the world the richness of Brazilian flora, and only within recent years that anything like a comprehensive account of it has been published: as far back as 1648 Willem Piso and Georg Marcgrav published in Amsterdam a large folio volume containing spirited woodcuts carefully coloured by hand of Brazilian flowers, shrubs, fishes, birds, reptiles, etc., but this was a natural history rather than a botanical book. Both these pioneers are commemorated in *Pisonia* and *Marcgravia*, species of which are still in cultivation.

In 1820 three scientific works dealing with Brazilian flora appeared. Mikan's *Delectus floræ . . . brasiliensis* was issued in Vienna: Raddi's *Di alcune specie nuove del Brasile* and his *Quarante piante nuove de Brasile*, were issued in quarto volumes in Modena. Four years later St. Hilaire published in Paris his *Histoire des Plantes* of Brazil and Paraguay; between 1827 and 1831 J. E. Pohl's *Plantarum Brasiliæ icones* appeared in two folio volumes in Vienna. Other floras of Brazil, notably that of Martius, 1837-40, came out at intervals, and by the end of the century the plant life of Brazil was well covered by scientific publications.

So far as Great Britain is concerned, and it may be taken as a criterion of Europe generally, the most com-

prehensive record of sources and dates of the introduction of South American plants is Loudon's *Hortus Britannicus*, first published in 1830. It enumerates something like thirty thousand species, exotic and otherwise. As the importation of South American plants was only in its infancy at that time many hundreds of flowers, now familiar in gardens and hot-houses, are not recorded, but the book is reasonably complete up to the time of publication. Most of the more important introduced aliens, before and after the date of Loudon's great work, may be found described and illustrated in the *Botanical Magazine of London* (issued monthly from 1787 to the present time), while others are dealt with in Loddiges' *Botanical Cabinet*, 1818-24, and in many other of the quantity of horticultural publications appearing in Europe during the first half of the nineteenth century—notably in Nicholson's *Dictionary of Gardening* and in the revised edition of Johnson's *Gardener's Dictionary*, bringing the record to the end of the nineteenth century.

Whilst many European botanists, such as Langsdorff, Burchell, Lhotsky and others had, during the earlier decades of the nineteenth century, explored certain parts of Brazil, nothing was of more importance to general knowledge of the plant-treasures of the country than the work accomplished by a Scotch botanist, Dr. George Gardner, afterwards Superintendent of the Botanical Gardens of Ceylon. His *Travels in the Interior of Brazil* during 1836-41 is a record of high merit, not only on account of its contribution to Brazilian botany and natural history, but because it is a faithful and genial picture of life and conditions in the

interior of Brazil three-quarters of a century ago. The amazing richness and beauty of Brazilian flora had never before been revealed to Europeans as through Gardner's book and his collections of thousands of specimens; it is extraordinary that these fascinating *Travels* should have remained out of print.

Of all the groups of plants introduced to the rest of the world from the southerly countries of the New World, orchids easily rank first, as the most precious, the most varied and beautiful, and the most costly: the first brought to England came from the East and West Indies. *Epidendrum cochleatum* found its way from Jamaica to England and was flowered for the first time in 1787; another species of the same lovely family, *Epidendrum fragrans*, came also from Jamaica in 1778 but was not flowered until 1788. In 1794 fifteen species of epiphytal orchids were at Kew, chiefly brought from the West Indies by Admiral Bligh, and for many years these islands, and India, were the main sources of orchid importation. But in 1793 a species of *Oncidium* was introduced to England from Panama: in 1811 another came from Montevideo, and by 1818 Brazil had begun to contribute species of the same genus. In 1825 Lodiges of Hackney, London, had in cultivation some eighty-four species of orchids from South America and the East, and by 1830 the Royal Horticultural Society of London had collectors in various parts of Brazil, hunting for rare plants.

Many beautiful orchids were sent home by business men residing in South America; for instance, William Cattley of Barnet, who died in 1832, and whose name is commemorated by the noble Cattleya, established an extensive correspondence with business men living

abroad for the purposes of obtaining new and rare orchids, and through his efforts came many fine specimens, chiefly from Brazil. The earliest Brazilian *Cattleya* to reach Europe was *C. Loddigesii*, 1815, but the most famous and most protean species of all *C. Cabiata*, reached Europe in 1818, and others of the same genus came in rapid succession from Brazil, Colombia, Mexico, Costa Rica, Guatemala and the Argentine. Many beautiful Brazilian orchids were sent by William Harrison, a merchant living in Rio de Janeiro during the thirties and forties of last century, to his brother Richard in Liverpool, whose residence at Aigburth was in those days a Mecca to which orchid lovers paid annual pilgrimages.

To introduce these plants was one thing; to cultivate them successfully was quite another. Hooker once declared that for more than half a century England was "the grave of tropical orchids" and that those surviving did so in spite of, rather than on account of, the treatment they received. Each grower had his special system, mostly wrong: it was not until after repeated and costly failures that orchid importing and growing became a success, and that success only became general about 1850.

The debt of other countries to Brazil and indeed all tropical America for ferns and cacti is also great. The *Canna* and its ally *Marcanta* may be traced in England as far back as 1730; the *Begonias* and the *Gesnera* date from 1816-18, whilst the favourite *Abutilon*, introduced in 1837, is today hardy in many parts of Europe. The *Gloxinia*, arriving from South America a century earlier, has developed possibilities undreamt-of by earlier horticulturists, and the same may be said of



On the Madeira River, Amazonas; rapids at Tres Irmãos.
Victoria Regia lilies near Manãos.

the Fuchsia, brought from Mexico and Chile, 1823-25. The most popular South American shrub is the *Escallonia macrantha*, introduced from the island of Chiloe (Alexander Selkirk's retreat) in 1848; it has for many years been a favourite hedge plant in the county of Cornwall, where it thrives in pink profusion.

The Calceolaria is another early nineteenth century alien from South America; so too is the Dahlia: sixty years ago whole nurseries were given over to the culture and hybridization of this flower, and an entire literature appeared on the subject. Its popularity has somewhat waned, but on the other hand the most gorgeous of greenhouse climbers, Bignonia, was never more treasured than it is today. Brazil, and other adjacent countries, has given us also many species of such genera as Achimenes, Alstromeria, Anthurium, Aristolochia, Caladium, Calathea, Hibiscus, Iponoea (the Evening Primrose), and hundreds of other beautiful plants.

Among plants introduced and cultivated abroad for other reasons than their loveliness are the pineapple (*Anana sativa*) which reached Europe as early as 1690; coconuts were carried from Brazil a century ago; and the Brazil nut (*Bertholletia excelsa*), which was probably first taken to Portugal by very early navigators, finds its first mention in England in the 1830 edition of Lindley's *Natural System of Botany*; he speaks of the "Souari . . . or Brazil nuts of the shop, the kernel of which is one of the most delicious fruits of the nut kind."

Brazil's gifts to the pharmacopeias of the world have also been very valuable. Discovery, or rather publication in Europe of the medicinal properties of many

Brazilian plants is due to Piso, author with Marcgrav ("een geboren Duitscher") of the work *De Medicina Brasiliensi*, etc., of 1648, already mentioned. This monumental publication was undertaken under the patronage of Count John Maurice of Nassau, Governor of North Brazil during the period of Dutch occupation, a far-seeing man whose portraits are to be seen in the public galleries of Amsterdam and Brussels. Nearly all the Brazilian plants with notable medicinal properties are fully described and illustrated in this book: among them, and perhaps the best known, is Ipecacuanha, obtained from the root of *Cephalis ipecacuanha*, native to the damp shady forests of Brazil. This drug was first mentioned in an account of Brazil given by a Portuguese friar in Purchas's *Pilgrimes*, 1625, where it is called *Ipecaya*, so that it is clear that Piso, although the first to bring the drug to the notice of European medical men, was not the discoverer of its qualities. In England the famous physician John Pechey was the first savant to bring ipecacuanha to general notice in his *Observations made upon the Brazilian root called Ipepocoanha*, issued in 1682; a few years later it was firmly established in European medicine. In 1686, says A. C. Wootton (*Chronicles of Pharmacy*, 1910) Louis XIV bought from Jean Adrien Helvetius the secret of a medicine with which a number of remarkable cures had been performed; Helvetius, whose patronymic was Schweitzer, was the son of a Dutch quack, and he not only made his own fortune out of ipecacuanha (the royal gift alone was a thousand louis d'or) but got the appointment of Inspector General of the hospitals of Flanders and court physician to the Duke of Orleans.

Another famous drug from Brazil is the Balsam of

Capevi (or Copaiba—Copaiva), the sap of *Copaifera officinalis*, a genus of the leguminous order of plants; it was described by Piso; is mentioned in Edward Cooke's *Voyage to the South Sea and round the World*, published in 1712, and first made its appearance in English gardens in 1774, having previously figured in Jacquin's *Stirpium Americanarum Historia*, 1763.

Jaborandi, obtained from the dried leaflets of *Pilocarpus pennatifolius*, was described by Piso and Marcgrav: like the two mentioned above, this drug was well known to the native tribes of Brazil and employed by the pagés or medicine-men; it received its first serious notice in recent times in the *Diccionario de Medicina* published by Dr. T. J. H. Langgard in Rio de Janeiro in 1865. The plant reached English gardens three years later, but its properties do not seem to have been recognized in Europe until 1874, when a Brazilian scientist, Dr. Coutinho, sent some leaves to M. Rabutau, the eminent pharmacist of Paris, who tested it and declared it to be as valuable as quinine as a febrifuge and sudorific.

Guaraná (*Paullinia sorbilis*, Mart.) is a tonic widely used in Brazil and Peru, which has recently been making its way into favour in Europe, France taking the drug readily. It is obtained from seeds, and a paste made which hardens into such a consistency that it can only be powdered by a grater; this powder is dissolved in cold water and taken as a tonic and digestive. One of Brazil's bottled mineral waters is also made with Guaraná added, and the pink-tinted, rather acrid drink is quite agreeable.

The Brazilian interior, and particularly Amazonas, is so rich in medicinal herbs, seeds and roots, that it

would take pages to give their names, and as they are not popularly known, the reader would not be greatly enlightened, but the Quassia (*Quassia amara*, Linn.) has international fame; Jalap (*Piptostegia Pisonis*) is an old acquaintance. Many drugs have local names as the Lagryma da Nossa Senhora (Tear of Our Lady), a diuretic; the Melão de São Caetano (S. Caetano's Melon), whose little fruit of the cucumber class is a medicine, whose stalks furnish a fine fibre, and whose leaves contain potash. There is at least one remarkable astringent, the Cipó Caboclo (*Davallia rugosa*); Cambará is a much-used base for pectoral syrups; the Batata de Purga and the Purga do Pastor are used all over Brazil; many of the Rubiaceae are used as febrifuges; there are numbers of tonics, as the Laranjeira do Matto (Forest Orange) and the Páo Parahyba and Páo Pereira. Andiroba oil is used to make a skin soap, and also to light the family lamp in northerly states; the Sapucainha (*Carpotroche brasiliensis*) tree yields a nut containing fifty per cent of oil used locally for rheumatism in Minas, Rio and Espirito Santo; and the Pinhão de Purga's seeds furnish an oil said to be convertible into gas.

Besides the well-known Vanilla, there is known one fine flavouring and scenting plant, the Páo precioso, one of the Lauraceae; its bark and seeds are sweetly perfumed and it is much used by local chemists.

Brazil could if necessary ship excellent mineral waters abroad. There is an import of bottled waters into Brazil, but they have rivals in the national waters, chiefly found in Minas Geraes and there bottled by Brazilian companies. Perhaps the most popular are

Caxambú and Salutaris, but there are others. The chief points of origin are at Aguas Virtuosas, Caxambú, Lambary, Cambuquira, São Lourenço, and the recently opened wells at Araxá.

Altogether the natural gifts of Brazil in minerals and plants are such that not only does she supply the basis for many home-made remedies but also ships drugs abroad; were her resources better investigated and quantities developed she could greatly increase her position as a supplier of medicines to international markets.

CHAPTER VIII

BRAZIL'S EXTERIOR COMMERCE

STUDYING the commerce of Brazil with the rest of the world, following the remarkable variations in amount of export of certain articles, and the no less remarkable fluctuation in price of others, one comes at last to the conclusion that Brazilian trade has never had a normal year. Almost every twelve months has seen changes taking place which are not the result, in most cases, of the growth, to be expected, along definite lines; influences unforeseen have more than once knocked the bottom out of certain prosperous businesses, production has been affected by remote causes, or stimulated by others as little to be normally reckoned upon. The history of Brazilian exterior commerce, which is largely the history of her exports since purchases depend upon income, shows some of the most sensational transferences of prosperity from one region and industry to another, oddest appearances and disappearances of industries, falls and rises of prices, in commercial records.

To realize something of this it is only necessary to think of the dominance of the northern promontory, in colonial days, when sugar was the great Brazilian staple together with dyewood, and of the total disappearance of the latter—until the last year—from consideration; of the once-feverish gold industry, which

shipped over a thousand tons of the refined metal in its hey-day, employing an army of people, and which has now vanished, with the exception of the operations of two British-owned companies; of the obliteration of Brazil's fame as a diamond producer after the discovery of the blue-clay deposits of Kimberley; of the rise of the once-neglected and uncolonized south to the position of "leader" section of the country with its enormous coffee production, built up during the last forty years; of the phenomena of the rubber export of the extreme north, as well as the new developments in Brazilian business appearing on the horizon, great in potentiality, during the war period, and which may bring Brazil into the front rank of countries exporting chilled beef and producing manganese ore. Few countries on the active list have seen such revolutions in industry; they have been largely due to the variety of Brazilian regions, and they will in all probability be repeated while Brazil opens her great expanses of virgin prairies, forests, and mineral-saturated hills. **Bancroft Library**

The following figures show that between 1915 and 1920, Brazil's exterior commerce was nearly equal in value to that of the previous ten years:

<i>Ten-year Period</i>	<i>Total Importa- tion Values</i>	<i>Total Exporta- tion Values</i>	<i>Relation of Imports to Exports</i>	<i>Average Value of Mitreis in Pence</i>
1846-1855...	737,720 contos...	691,740 contos...	106.6%.....	27 1/16
1856-1865...	1,228,171 " ...	1,225,563 " ...	100.2%.....	26 9/32
1866-1875...	1,551,630 " ...	1,902,331 " ...	81.5%.....	21 9/16
1876-1885...	1,768,564 " ...	1,969,515 " ...	89.8%.....	19 31/32
1886-1895...	3,267,650 " ...	4,073,764 " ...	80.2%.....	18 3/16
1896-1905...	4,856,634 " ...	7,324,009 " ...	66.3%.....	11 35/64
1906-1915...	6,331,487 " ...	8,115,492 " ...	78 %.....	14 39/64
1916-1920 ¹ ...	6,063,000 " ...	7,397,300 " ...	81.5%.....	13 11/25

¹ Five years.

These figures show one or two points clearly—first, the vitality of Brazil, for as one industry has waned another has waxed, exportation values steadily showing increases in spite of the caprices of fortune; it is also plain that for the last fifty years Brazil has exported more than she has imported. In war years, this excess of exports was very much more accentuated, but, although this balance is useful in helping to steady exchange, to pay debts abroad, and to put money into shippers' and producers' pockets, it has the effect, when imports are greatly curtailed, of starving the Federal Government, whose revenues are mainly dependent upon import taxes.

The famous "nine principal articles" of Brazilian export were coffee, cotton, sugar, rubber, cacao, hides (of cattle), skins (of goats and sheep), tobacco, and matte ("Paraguay tea") up to 1916. Other items which displayed marked rises up to 1918 were lard, rice, Brazil nuts, carnauba wax, manganese ore, precious and semi-precious stones, and chilled or frozen beef. Prosperity over all Brazil depends much more upon volume and variety of goods exported than upon prices, for while soaring values put large profits into the hands of the few, great volumes of products mean employment for the field labourer or collector, for transportation companies, and a host of intermediaries. In addition to increased prices, the actual volume of Brazilian exports was larger in the five years 1916-1920, rising from seven million tons in 1911-1915 to nearly ten million tons. This prosperity was due to war calls, several new items appearing on the 1916-20 lists on page 319.

The preponderance today of São Paulo as a producer state is shown by her shipment values—465,212

	1915	1914	1913	1912	1911	
Coffee.....	17,061,000	11,270,000	13,267,000	12,080,000	11,258,000	bags
Matte.....	75,885	59,354	65,415	62,880	61,834	tons
Rubber.....	35,165	33,531	36,232	42,286	36,547	"
Sugar.....	59,074	31,860	5,367	4,772	36,208	"
Cacao.....	44,980	40,767	29,759	30,492	34,994	"
Hides.....	38,324	31,442	35,075	36,255	31,832	"
Tobacco.....	27,096	26,980	29,388	24,706	18,489	"
Cotton.....	5,228	30,434	37,424	16,774	14,650	"
Skins.....	4,578	2,487	3,232	3,189	2,798	"
	1920	1919	1918	1917	1916	
Coffee.....	11,525,000	12,963,000	7,433,000	10,606,000	13,039,000	bags
						metric
Matte.....	90,686	90,200	72,781	65,431	76,777	tons
Rubber.....	22,876	32,213	22,211	31,590	28,865	"
Sugar.....	109,141	69,429	115,634	138,159	54,438	"
Cacao.....	54,419	62,584	41,865	55,622	43,720	"
Tobacco (leaf)	30,562	42,575	29,011	25,282	21,021	"
Cotton (raw).	24,696	12,153	2,594	5,941	1,071	"
Cotton seed..	23,564	22,649	42	22,882	11,762	"
Rice.....	134,554	28,423	27,916	44,639	1,315	"
Mandioca Flour.	8,660	21,834	65,322	18,745	5,370	"
Beans.....	23,000	58,607	70,914	93,536	45,817	"
Brazil Nuts..	9,279	24,998	6,750	16,057	9,882	"
Hard Woods.	125,394	103,824	179,799	64,264	82,816	"
Manganese..	453,737	205,725	393,388	532,855	503,130	"
Meat.....	63,600	54,094	60,509	66,452	33,661	"
Lard.....	11,166	20,028	13,270	10,235	3	"
Hides.....	37,265	56,788	45,584	39,912	53,511	"
Tinned Meat	1,649	25,398	17,223	6,552	856	"
Skins.....	3,966	5,166	2,215	3,046	3,840	"

contos out of the total exports, or about forty-six per cent of Brazilian sales. Next in values come the sales of Minas Geraes, worth 221,000 contos, and Rio de Janeiro state, with about 176,000 contos; Bahia is fourth, with exports worth over 102,000 contos; Pará and Amazonas follow with about 70,000 and 64,000 contos respectively; Paraná, 33,565 contos; Espirito Santo, nearly 30,000; and Pernambuco, with 22,600 contos, are next, followed by Ceará, shipping nearly

19,000 contos' worth of goods, to Rio Grande do Sul, with sales worth almost 16,000 contos; the only other state shipping over 10,000 contos' worth of goods is Maranhão.

The United States has been for many years the greatest single purchaser of Brazilian materials, generally taking rather more than one-third of all exports, Europe taking nearly all the rest, with South America also buying an appreciable share, amounting to about five per cent of the total. The coffee trade is that in which the United States is most largely concerned: for the last six years Brazilian exports of coffee have averaged over fourteen million bags, and of this the United States has been taking about one-third, Germany, Austria and the Netherlands accounting for another third, France taking from one to two million bags, and the rest of Europe absorbing the remainder. The United States, purchaser of a billion dollars of tropical and sub-tropical products in 1915-16, is an eager taker of Brazilian hides and skins, an export markedly stimulated since the European War began, important shipments coming from Rio Grande do Sul among other cattle states; she has, during the last two years, apparently been able to receive larger quantities of all Brazilian products, and perhaps the most salutary trend, for both the United States and Brazil, has been in the great quantities of raw materials taken by the northern country. These materials are the breath of life to the manufactures, and nothing is better for Brazil than increased volumes of such exports.

During 1915 the United States bought, reckoning in dollars, nearly \$107,000,000 of Brazil's total exports of over \$255,000,000, while Great Britain took

\$31,000,000, France \$29,000,000, Sweden \$23,000,000 (chiefly coffee, and, in view of the disappearance of direct sales to Germany, in all probability transferred to the Central Powers), and the Netherlands \$16,000,000; sales to the Argentine were nearly \$13,000,000, while Uruguay took about four and a half million dollars' worth of goods. Apparently, trading between Brazil and her South American neighbours on the same side of the Andes has been greatly increased during 1916, Argentina buying unprecedented amounts of sugar, as well as maintaining her imports of matte. During 1915, the total sales of Argentina to Brazil were worth over 89,000 contos, or something like \$22,000,000, of which nearly \$20,000,000 were accounted for by wheat and wheat flour. At the same time Brazil sold to the Argentine 42,226 contos' worth (say \$10,560,000) of goods, of which nearly 70 per cent was accounted for by matte sales, with 15 per cent of tobacco.

Brazilian imports show important changes in places of origin since the European War; formerly Great Britain was by far the greatest seller to this country, supplying nearly a third of the total goods purchased. In 1911 the order in importance of countries selling to Brazil were Great Britain, Germany, the United States, France, Argentina, Portugal, Belgium; in 1912 and 1913 the same order was maintained, but with Germany increasing her sales at a greater rate than Great Britain, while the United States also showed gains.

In 1914, with the outbreak of war, England still retained her top place, but with reduced values, while the United States drew second, Germany third and the Argentine fourth. In 1915, the United States sold

more goods than any other country, and Great Britain came second, maintaining her command of the market in cotton piece goods in a remarkable manner, and holding over half of the coal sales in the latter item until 1916, when United States' sales replaced the Welsh coal, whose export was then prohibited. Development of South Brazilian coal fields also helped to supply the home market to an increasing degree. During 1921-2 Britain recaptured much of her coal sales, and the share of the United States fell almost to pre-war conditions, from top place (81%) in 1920.

In U. S. currency, Brazil imported nearly \$146,000,000 worth of goods in 1915, the United States selling about \$47,000,000, England nearly \$32,000,000 worth, while Germany's former average of fifty-two millions was reduced to two. Many of these changes were due to the abnormal war situation, and while it could not be expected that the United States would retain an advantage due to the elimination of competitors, she was still the greatest supplier of goods in 1920, selling over twice as much as her nearest rival, Britain, or goods worth \$52,000,000, in comparison with Britain's \$25,000,000. The European countries organized for overseas trading are making strenuous and determined efforts to regain the commerce built up by the transportation lines and development work financed from Europe; although they awaited the end of the war to renew these efforts. Probably the best recommendation of the United States to a large share in Brazilian imports lies not in commissions and reunions, but in her extensive purchases of Brazilian raw material.

Broadly speaking, nearly sixty per cent of Brazilian

imports are manufactured goods. Large quantities of machinery, steel rails, locomotives, etc., are usually imported every year for the construction work needed in a vast and young country. Over twenty-four per cent of the total purchases are of foodstuffs with wheat and wheat-flour largely preponderant: last year one-fifth of the total imports of Brazil were credited to these two items. About ten per cent of Brazilian purchase money is paid for coal. Financial stringency due to abnormal conditions has cut down Brazilian imports in a salutary manner—and fortunately for Brazilian merchants and retailers, stores were at the outbreak of hostilities largely overstocked by the unprecedentedly large purchases of 1913, when \$326,000,000 was paid for imports.

As a result of big sales and reduced buying, Brazil in 1915 had a trade balance in her favour of about 440,000 contos of reis (exports 1,022,634 contos and imports 582,996 contos) the equivalent of nearly \$140,000,000 in United States currency. This balance appears to have largely remained abroad to help meet Brazilian indebtedness, and helped to steady exchange. This surplus of export values dropped well below 400,000 contos in 1916 and 1917, and to 148,000 in 1918, but rose to the unprecedented height of 845,000 in 1919, when the milreis soared to the rather inconvenient exchange value of 18 pence. The years 1920 and 1921 witnessed adverse balances of trade, with the milreis fallen below 8 pence, 1922 showing trade recoveries practically to pre-war values. Brazil has weathered many a storm commercially and industrially because the world needs her raw material; she has every reason for confidence in the future.

<i>State</i>	<i>Capital</i>	<i>Area</i> <i>Sq. Kilometers</i>	<i>Population</i>
Alagoas.....	Maceió.....	58,500.....	785,000
Amazonas.....	Manáos.....	1,895,000.....	390,000
Bahia.....	São Salvador.....	427,000.....	2,500,000
Ceará.....	Fortaleza.....	104,250.....	1,000,000
Federal District.....	Rio de Janeiro..... (São Sebastião)	1,116.....	1,200,000
Espirito Santo.....	Victoria.....	45,000.....	400,000
Goyaz.....	Goyaz.....	747,000.....	300,000
Maranhão.....	São Luiz.....	460,000.....	500,000
Matto Grosso.....	Cuyabá.....	1,379,000.....	245,000
Minas Geraes.....	Bello Horizonte.....	575,000.....	4,500,000
Pará.....	Belem.....	1,150,000.....	660,000
Parahyba.....	Parahyba.....	75,000.....	600,000
Paraná.....	Curityba.....	250,000.....	500,000
Pernambuco.....	Recife.....	128,400.....	2,100,000
Piauhy.....	Therezina.....	301,800.....	425,000
Rio de Janeiro.....	Nictheroy.....	69,000.....	1,300,000
Rio Grande do Norte.....	Natal.....	57,500.....	410,000
Rio Grande do Sul.....	Porto Alegre.....	236,500.....	1,500,000
Santa Catharina.....	Florianopolis.....	43,535.....	450,000
São Paulo.....	São Paulo.....	290,876.....	3,000,000
Sergipe.....	Aracajú.....	39,090.....	450,000
Acre Territory.....		191,000.....	100,000

The Territory of Acre was legally acquired from Bolivia by the Government of Brazil in 1903 but had been populated and the rubber reserves worked by Brazilian *seringueiros* for at least ten years previously. Their entry into Bolivian lands was the cause of much friction until the final settlement by the payment by Brazil of £2,000,000 for this rich area.

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AMAZONAS

Ru...16,530,000 Kils

Co..... 560,000 Kils

N.....70,000 Hectolitres

Cop.....8,000 Kils

PF.....5,000 Kils

Manáos

Itacoatiara

ACRE TERRITORY

MATTO GROSSO

Ru...5,000,000 Kils

Mt..2,000,000 Kils

H.....700,000 Kils

F.....200,000 Kils

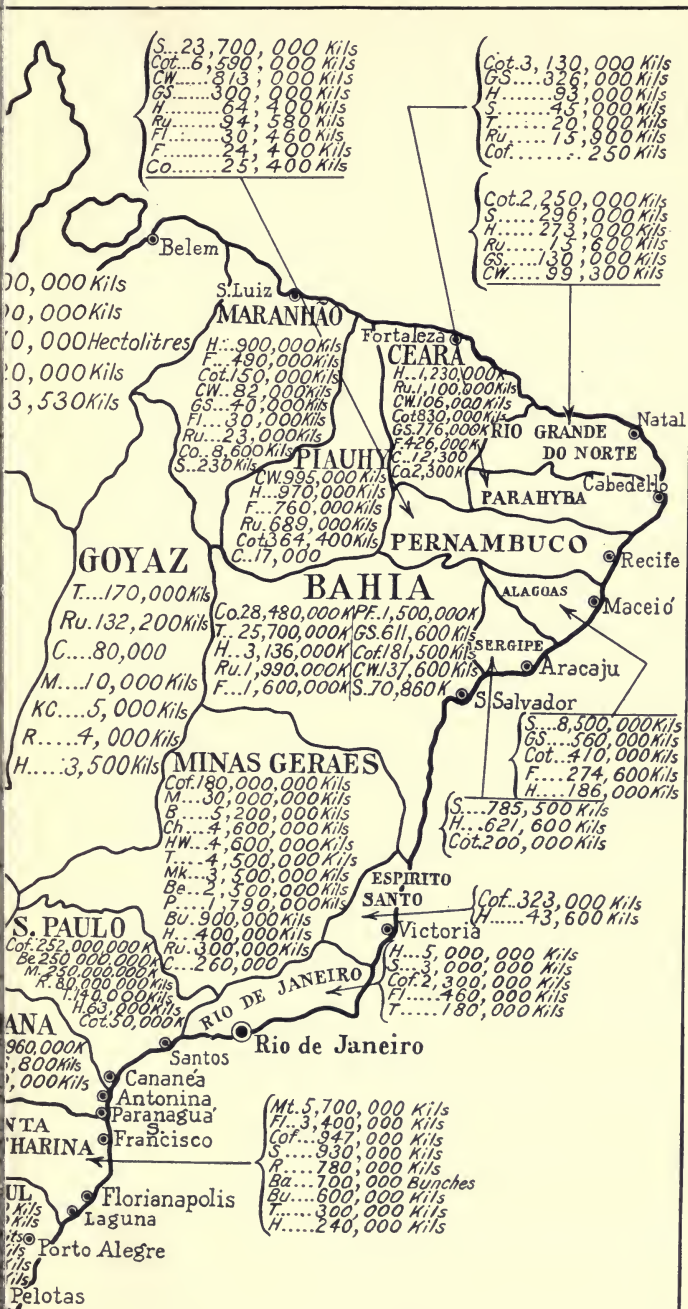
C.....200,000

GS.....10,000 Kils

B.....Bacon
Ba.....Bananas
Be.....Beans
Bu.....Butter
CW.....Carnauba Wax
C.....Cattle
Ch.....Cheese
Co.....Cocoa
Cof.....Coffee
Cop...Copahyba
Cot.....Cotton
DM.....Dried Meat
F.....Feathers
Fl.....Flour
GS....Goat Skins
HW....Hardwoods
H.....Hides
KC.....Kapok Cotton
M.....Maize
Mt....Matte
Mk.....Milk
N.....Nuts (Brazil)
PF....Piassava Fibre
P.....Potatoes
R.....Rice
Ru....Rubber
S.....Sugar
T.....Tobacco
W.....Wine
Wo....Wool

Corumbá

R
GRAND
DM 50,00
H...20,80
W...10,00
Mt...8,000
Fl...3,980
Wo...1,260
F...333,0
T...260,0
GS...30,0



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BRAZILIAN TERMS

Alagôano: native of Alagôas. Native of Amazonas State, *amazonense*. Native of Bahia, *bahiano*; of Ceará, *cearense*; of Espírito Santo, *espírito-santense*; of Goyaz, *goyano*; of Maranhão, *maranhense*; of Matto Grosso, *matto-grossense*; of Minas Geraes, *mineiro*; of Pará, *paraense*; of Paraná, *paranaense*; of Piauí, *piauhyense*; of Parahyba, *parahybano*; of Pernambuco, *pernambucano*; of São Paulo, *paulista*; of Santa Catharina, *catharinense*; of Rio Grande do Norte and Rio Grande do Sul, *riograndense do norte*, or *riograndense do sul*; of Sergipe, *sergipano*. A native of the north is a *nortista*; of the south, a *sulista*; of Brazil, in general, *brasileiro*.

Aviador: properly, *aviator*, but has special meaning on the Amazon; is applied to the dealer who supplies the *seringaes* with outfit and food for the season, and who purchases the rubber crop. The *aviado* is the customer of the *aviador*.

Bateia: bowl for washing out placer gold.

Borracha: any kind of rubber in Brazilian; the term *goma* is also sometimes used, but applied only to latex of *hevea brasiliensis*.

Braços: lit. "arms," that is, labourers; hands.

Cabotagem: Brazilian navigation, whether coastal or riverine.

Caipira: countryman from the south—"hayseed." The equivalent type from the north is a *matuto*.

Capoeira: second growth of vegetation after land has been cleared. Also applied to kind of basket made of native grass; also to the Brazilian equivalent to jiu-jit-su; genuine capoeira adepts have remarkable muscular control. The term *capoeira* is also applied to a certain dance.

Capim: grass (plural, *capins*) of different kinds, as *capim gordura*, *capim panasco*, *capim sertão*, etc.

Carioca: native of Rio de Janeiro City—from the Carioca fountain, once fashionable centre of city.

Carreiro: by-path of the interior.

Colono: labourer imported, whether from another country or a sister State.

Conto: (of reis); one thousand milreis, or 1,000,000 reis. In paper, worth normally over £66, but since European War value fluctuates about £50, or say \$250.

Engenho: sugar mill.

Estrada de Ferro: railroad; *Rede ferroviario*, railway system, lit. "net" of railways.

Fazenda: in South, any farm or estate of coffee, cacao, cattle, etc.; in north more exclusively applied to cattle farm. *Fazendeiro*, farmer or estate owner.

Fallencia: failure, bankruptcy.

Farinha: flour. — de mandioca, of two kinds "white" and "yellow," made from root of one of the Euphorbias.

Feijão: beans, red, black or white, universal Brazilian food; *feijoada*, special dish made with beans, dried meat, pepper, mandioca flour, etc.

Flagellados: lit. "the scourged," applied to people from the northern drought districts.

Fluminense: native of Rio de Janeiro State, from Lat. flumen, river; Portuguese discoverers thought Rio Bay mouth of a river, and so named it "River of January." There is no river, but the name remains, and the *fluminenses* are proud to call themselves "river folk."

Frigorifico: cold storage, properly; applied to packing-houses also.

Gaiola: properly, cage; also applied to small open boats traversing Amazonian fluvial network.

Garimpeiros: diamond hunters of Brazilian interior.

Herva: lit. herb: applied to the leaf of *ilex paraguayensis*, known in Brazil as *herva matte* and in Spanish America as yerba maté.

Herval, forest of trees from which leaf is obtained: pl. *hervaes*.

Matadouro: slaughterhouse.

Matto: wild Brazilian woodland: *matteiro*, expert forester.

Modinha: Brazilian folk-song: term *fado* also used.

Parecer: lit. opinion; generally applied to views given upon public matters by eminent men.

Paroara: person going from another district to work in the Amazon rubber country.

Pauta: rate of export tax; changed frequently in response to international market prices for such Braz. goods as cacao, rubber, tobacco, sugar, etc.

Patrão: owner or manager of estate or business.

Pelle: ball of rubber made by seringueiros.

Praieiro: one who lives by the *praia*, or shore.

Rebanho: stock of animals, herd or flock.

Regatão: row-boats of petty traders upon Amazonian waterways.

Resaca: violent wave-movement, often seen in Rio and Recife, when a receding meets an oncoming wave and water is thrown up; *resacas* along the Rio sea-front often throw spray sixty feet into the air.

Romaria: pilgrimage made by religious-minded to the places where there are churches containing images of special devotion.

Safra: time of harvest; the crop yield is the *colheita*.

Seringa: gum of *hevea brasiliensis*; *seringueira*, rubber tree; *seringueiro*, man who collects rubber; *seringal*, rubber district in forest—pl. *seringaes*.

Serra: mountain range; *serro*, small hill. (*Montanha*, mountain.)

Sertão: Brazilian interior; pl. *sertões*. *Sertanejo*, *sertanista*, one who dwells in the sertão.

Tropa: troop—generally of mules, used for cargo carrying in interior of central and northern states; term also used in original sense of military regiment or battalion; *tropeiro*, the conductor of a troop of cargo mules or other animals.

Vaqueiro: (from *vaca*, cow)—employee specially employed upon stock-breeding estates. Compare with *gaúcho*, the cowboy of the South.

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